Draft Revised PM10 Maintenance Plan for the Lamar Attainment/Maintenance Area

Colorado Department of Public Health and Environment

Revised PM10 Maintenance Plan Submittal:
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SECTION 1: INTRODUCTION

This document is the second revision of the PM10 Maintenance Plan for the Lamar Attainment/Maintenance Area. The Environmental Protection Agency (EPA) first approved a particulate matter under 10 microns (PM10) redesignation request and maintenance plan for the Lamar area on October 25, 2005 (70 FR 61563), which became effective on November 25, 2005. The Lamar redesignation request and maintenance plan was adopted by the Colorado Air Quality Control Commission (AQCC) on November 15, 2001.

This second maintenance plan was prepared to meet the provisions of section 175A(b) of the Clean Air Act and contains the same emission control strategies as the first maintenance plan that was adopted by the Commission in 2001. The 2012 revised plan includes updated the emissions inventories and projections using the latest EPA-approved tools. This plan establishes a new PM10 motor vehicle emissions budget (MVEB) of 764 pounds per day in 2025.

The City of Lamar, Powers County, and the State of Colorado request continuation of "attainment/maintenance" status for the Lamar PM10 nonattainment area. The Lamar area was originally designated as nonattainment for the daily PM10 National Ambient Air Quality Standard (NAAQS) since 1990, although the area is presently demonstrating attainment with the PM10 NAAQS. The Maintenance Plan section of this document has been updated and will demonstrate that the area will be able to maintain the NAAQS through the year 2025. The benefits of maintaining a redesignation to attainment status include:

1. Areas in attainment/maintenance lose the stigma associated with nonattainment of the NAAQS.
2. Areas in attainment/maintenance do not become "serious" nonattainment areas even if a violation of the NAAQS occurs. This means that specific control measures can be applied to address a violation without going through a rigorous federal process, where serious areas must implement mandatory control measures and be subject to numerous administrative activities.
3. Prevention of Significant Deterioration (PSD) permitting requirements replace New Source Review (NSR) permitting requirements for new and modified major stationary sources. These permitting requirements are important for large industrial facilities that are not currently located, nor likely to locate, in the Lamar area.

This analysis is designed to document and ensure continuing attainment and maintenance of the NAAQS for PM10 in the Lamar area. This document is intended to comply with requirements of the federal Clean Air Act (CAA), and with relevant procedures and policies of the United States Environmental Protection Agency (EPA).

A. BACKGROUND

1. PM10 National Ambient Air Quality Standard

In 1971, the EPA set NAAQS for several air pollutants, including total suspended particulates (TSP), defined as particles with an aerodynamic diameter of less than 40 microns. In 1987, the EPA changed the TSP standard to the PM10 NAAQS. The current PM10 NAAQS allow for a maximum 24-hour average of 150 ug/m3. The 24-hour PM10 NAAQS may not be exceeded more than three times over any three year period.

There are both primary and secondary air quality standards. The primary standards are set to protect human health, with a margin of safety to protect the more sensitive persons in the population, such as the very young, elderly and the ill. Secondary standards are set to protect property, materials, aesthetic values and general welfare. For PM10, the national primary and secondary standards are the same. The numerical levels of the standards are subject to change, based on new scientific evidence summarized in air quality criteria documents. In 2006, the EPA revoked the annual PM10 standard but maintained the 24-hour average of 150 ug/m3 (see 71 FR 61144) for both the primary and secondary NAQQS.

In general, demonstrating attainment requires collecting representative air monitoring data and using approved measuring instruments and procedures, with adequate quality assurance and quality control. Air quality measurements in the Lamar area satisfy this requirement, as shown in Section 2 - “Table 1 – PM10 Monitoring Record”.

2. Health and Welfare Effects of PM10

Particulate matter is the term given to tiny particles of solid or semi-solid material suspended in the atmosphere, and PM10 is inhalable particulate matter 10 micrometers in diameter and smaller. In the Lamar area, PM10 is created from re-entrained road dust, carbon black (from automobile and diesel engines) and soot (from fireplaces, woodstoves, and coal stoves), as well as transported blowing dust from outside the maintenance area. PM10 from these combustion sources contains a large percentage of elemental and organic carbon, which contributes to atmospheric haze and to health problems.

Epidemiological studies and laboratory studies of humans and animals indicate that fine particles can be inhaled deeply into the respiratory system, resulting in aggravation of existing respiratory and heart diseases, damage to lung tissue, impairment of breathing and respiratory functions, alterations to the body’s physical and immune system defenses, and even premature death. Many fine particles are also composed of compounds that are known or suspected human carcinogens. People most sensitive to particulate matter are the elderly, children, and those with chronic lung disease, cardiovascular disease, influenza, and asthma.

The welfare effects of particulate air pollution are wide-spread. Because of the potential for extremely long-range transport of fine particles it is thought that no place on earth is free of particulate pollution generated by urban and rural sources. Chemical and photo-chemical reactions involving the particles may occur in the air, or once they

have been deposited on environmental media or structures. Such soiling and acid deposition causes visibility degradation, climate changes, and damage to crops, natural vegetation, water bodies, and aquatic life. In addition, sculpture and architecture may be damaged or destroyed by particulate soiling and acid deposition--both of which have been detected in the most remote areas of the world.

3. Lamar Nonattainment Area Classification History

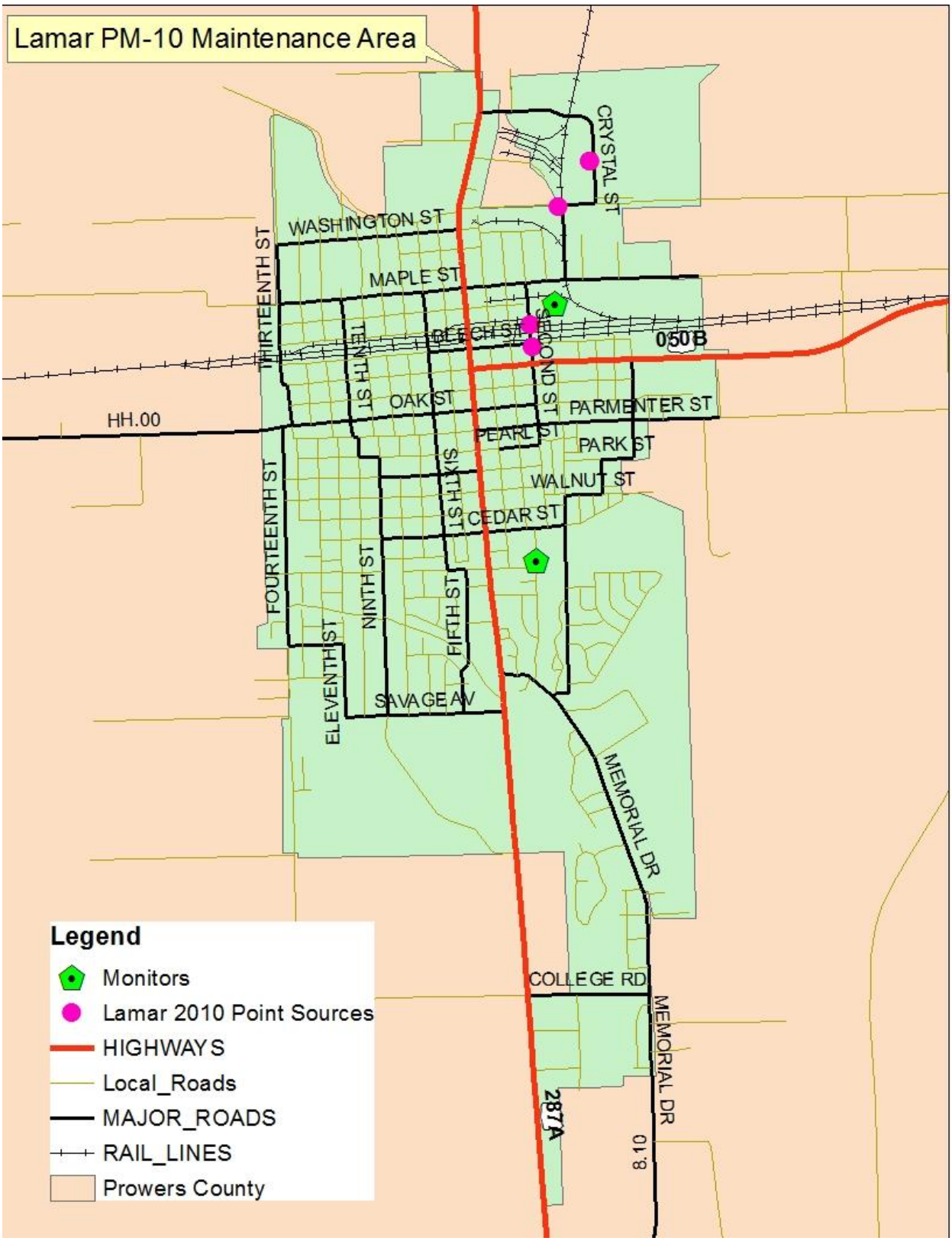
Because of observed problems with air particles, monitoring of total suspended particulates (TSP) began in 1975, and continued through 1987. In 1987, based on relatively high TSP levels, the Lamar area was designated as a “Group I” area for PM10. Lamar was then designated a “moderate” nonattainment area in 1990 pursuant to section 107(d)(4)(B) of the CAA.

4. Lamar Attainment/Maintenance Area Boundaries

The boundary for the Lamar PM10 attainment/maintenance area was officially adopted by the Colorado Air Quality Control Commission on June 20, 1991 that includes the Lamar city limits as they existed on August 1. 1991. This boundary was determined to be the reasonable Lamar airshed by considering local topography, meteorology, and land use practices.

A map illustrating the area boundary is shown in Figure 1.

Figure 1: Map of the Lamar Attainment/Maintenance Area



B. ORGANIZATIONS INVOLVED IN PREPARING AND APPROVING PLAN

Preparation of this revised maintenance plan was a cooperative effort of the City of Lamar, Powers County, and the Air Pollution Control Division (APCD) of the Colorado Department of Public Health and Environment. The document was approved by the Colorado Air Quality Control Commission (AQCC) on December 20, 2012. The EPA, through its regional office in Denver, provided policy advice and technical assistance, and is responsible for final approval of this revised maintenance plan.

C. REQUIREMENTS FOR REDESIGNATION AND MAINTENANCE

Section 107(d)(3)(D) and (E) of the CAA defines the five required components of a redesignation request and maintenance plan. These components and their descriptions follow:

1. Attainment of the Standard

The State must show that the area is attaining the PM10 NAAQS. This demonstration must be based on monitoring data representative of the location of the expected maximum concentrations of PM10 in the nonattainment area.

2. State Implementation Plan (SIP) Approval

The State must demonstrate that it has a fully approved State Implementation Plan (SIP) Element for Lamar under Section 110(k) of the CAA.

3. Permanent and Enforceable Improvement in Air Quality

The State must demonstrate that the improvement in air quality leading to redesignation is due to permanent and federally enforceable emissions reductions.

4. Section 110 and Part D Requirements

The State must meet all requirements of Section 110 and Part D of the CAA. Section 110 describes general requirements of SIPs, while Part D pertains to requirements applicable to nonattainment areas.

5. Maintenance Plan

The State must have a fully approved maintenance plan that meets the requirements of Section 175A of the CAA. This plan must provide for the maintenance of the NAAQS for at least 10 years following redesignation, and the plan must contain a contingency plan that describes potential control measures that could be implemented to ensure continued maintenance of the PM10 NAAQS.

SECTION 2: PM10 ATTAINMENT HISTORY

A. MONITORING HISTORY

Monitoring for total suspended particulates (TSP) in Lamar began in August 1975 at the Lamar Power Plant and at the Lamar Municipal Complex. The historic TSP levels were the basis for Lamar being designated as a "Group I" area for the new PM10 standards, which were promulgated by the EPA in 1987. Group I locations were those areas estimated to have a greater than 95 percent probability of exceeding the new PM10 standards.

Monitoring for PM10 began in 1985 at the Lamar Power Plant (100 N. 2nd Avenue) and an additional PM10 monitor was established at the Lamar Municipal Complex (104 E. Parmenter) in August 1986.

B. PM10 MONITORING DATA

While PM10 is currently being monitored at both the Lamar Power Plant site and the Lamar Municipal Complex site, because of serious deficiencies associated with the siting of the power plant monitor the Division does not believe that data from this monitor should be used in assessing the Lamar area's ongoing compliance with the PM10 standard. The power plant monitor is located within a fenced area on Lamar Light and Power property where the public does not have access. Accordingly, the monitor is not technically located within ambient air for impacts from the coal-fired power plant, although the Division acknowledges that the monitor is fairly close to the fence line. Despite its proximity to the fence line, however, the siting of the monitor makes it ill-suited to assess the public's PM10 exposure. Specifically, the monitor is located on a building roof-top within a few meters of a taller power plant building wall, which creates rooftop turbulence and affects air flow patterns around the sample probe depending on wind direction (i.e., air flow is blocked by the taller wall for about half of the directions on the compass) and wind speed (i.e., the tall wall north of the monitors can create turbulence and other aerodynamic effects). Given this, the Division does not believe that it is appropriate to use data from this site to assess community-level exposure for the purposes of this maintenance plan. Indeed, even if the purpose of the monitor was to assess microscale exposure the aerodynamic downwash/cavity zone on the building rooftop would not meet current PSD monitor siting criteria.

In addition to being poorly sited, the Lamar Power Plant site is a redundant monitor as the Lamar Municipal PM10 monitoring site is located 0.5 miles to the southeast. One PM10 monitoring station is adequate for a city the size of Lamar (population ~7,800) with a relatively small attainment – maintenance area (< 4.3 square miles).

Based on all these reasons, in 2011, the Division submitted a letter to EPA[1] requesting the removal of the Lamar Power Plant. After reassessing the relevant facts, the

[1] *Letter to Adam Eisele, EPA Region VIII, Proposed removal of Lamar Power Plant PM10 SLAMS site/sampler AQS ID:08-099-0001, dated November 21, 2011*

Division still concludes that removal of the monitor is the appropriate course of action. Moreover, in consideration of the identified Power Plant monitor site deficiencies, the Division believes it is inappropriate to use data from the Power Plant monitor to assess Lamar's ongoing compliance with the PM10 standard for the purpose of this maintenance plan update. Nevertheless, since EPA has not yet concurred on the Power Plant monitor removal request, the Division is including Power Plant monitor data for this maintenance demonstration in a parallel demonstration of continued maintenance of PM10 standard for the Lamar area using data from both monitors.

1. Lamar Power Plant PM10 Monitor (08-099-0001)

Table 1 lists the daily PM10 maximum, second maximum, third maximum, fourth maximum and estimated number of exceedances for the 11 year period from 2001 through 2011 for the Power Plant monitoring site.

Table 1: Lamar Power Plant – PM10 Monitoring Record

Year	1st Maximum ($\mu g/m^3$)	2nd Maximum (µg/m3)	3rd Maximum (µg/m3)	4th Maximum (µg/m3)	Yearly Estimated Exceedances	3-yr Average Estimated Exceedances
2001	**152**	133	111	108	1	0.33
2002	**246***	**246***	**196***	**181***	0	0.33
2003	132	120	113	99	0	0.33
2004	80	79	75	74	0	0
2005	**203***	116	110	100	0	0
2006	136	127	118	110	0	0
2007	93	82	76	72	0	0
2008	**367***	**227***	123	117	0	0
2009	**233****	**174***	**171****	138	2	0.67
2010	136	131	97	92	0	0.67
2011	**192***	**169***	113	108	0	0.67

Note: **Bolded numbers** denote values over the 24-hour PM10 NAAQS of 150 ug/m3

***** Denotes data flagged as an Exceptional Event (EE)

****** Denotes data not flagged before EPA deadline, (Appendix B analysis suggests EE)

Table 2 lists the Power Plant PM10 data completeness for the 11 year period. The data completeness over the last 10 years has been exceptional at the Power Plant site.

Table 2: Lamar Power Plant – PM10 Data Completeness Record

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Overall
	(# samples collected / # scheduled samples)*100 = (%)				
2001	76/90 (84%)	69/91(76%)	91/92 (99%)	90/92 (98%)	326/365 (89%)
2002	90/90 (100%)	90/91(99%)	91/92 (99%)	90/92 (98%)	361/365 (99%)
2003	88/90 (98%)	91/91(100%)	92/92 (100%)	92/92 (100%)	363/365 (99%)
2004	91/91 (100%)	91/91(100%)	84/92 (91%)	92/92 (100%)	358/366 (98%)
2005	89/90 (99%)	90/91(99%)	92/92 (100%)	92/92 (100%)	363/365 (99%)
2006	90/90 (100%)	89/91(98%)	92/92 (100%)	90/92 (98%)	361/365 (99%)
2007	90/90 (100%)	91/91(100%)	92/92 (100%)	90/92 (98%)	363/365 (99%)
2008	91/91 (100%)	90/91 (99%)	92/92 (100%)	91/92 (99%)	364/366 (99%)
2009	90/90 (100%)	91/91(100%)	92/92 (100%)	92/92 (100%)	365/365 (100%)
2010	89/90 (99%)	91/91(100%)	92/92 (100%)	91/92 (99%)	363/365 (99%)
2011	90/90 (100%)	91/91 (100%)	92/92 (100%)	92/92 (100%)	365/365 (100%)

2. Lamar Municipal Complex PM10 Monitor (08-099-0002)

Table 3 lists the daily PM10 maximum, second maximum, third maximum, fourth maximum and estimated exceedances for the 11 year period from 2001 through 2011 for the Municipal Complex monitoring site.

Table 3: Lamar Municipal Complex – PM10 Monitoring Record

Year	1st Maximum (µg/m^3)	2nd Maximum (µg/m3)	3rd Maximum (µg/m3)	4th Maximum (µg/m3)	Yearly Estimated Exceedances	3-yr Average Estimated Exceedances
2001	101	91	90	89	0	0
2002	**183***	**162***	143	138	0	0
2003	108	93	85	73	0	0
2004	93	82	77	71	0	0
2005	**164***	108	95	93	0	0
2006	116	88	80	76	0	0
2007	58	55	51	49	0	0
2008	123	118	90	86	0	0
2009	**176***	**173***	144*	118	0	0
2010	95	60	57	45	0	0
2011	122	115	108	79	0	0

Note: **Bolded numbers** denote values over the 24-hour PM10 NAAQS of 150 ug/m3

***** Denotes data flagged as an Exceptional Event (EE)

****** Denotes data not flagged before EPA deadline, (Appendix B analysis suggests EE)

Table 4 lists the Municipal Complex PM10 data completeness for the 11 year period.

Table 4: Lamar Municipal Complex – PM10 Data Completeness Record

Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter	Overall
	(# samples collected / # scheduled samples)*100 = (%)				
2001	74/90 (82%)	64/91(70%)	83/92 (90%)	88/92 (96%)	309/365 (85%)
2002	87/90 (97%)	90/91(99%)	91/92 (99%)	85/92 (92%)	353/365 (97%)
2003	69/90 (77%)	91/91(100%)	91/92 (99%)	62/92 (67%)	313/365 (86%)
2004	77/91 (85%)	83/91(91%)	88/92 (96%)	90/92 (98%)	338/366 (92%)
2005	82/90 (91%)	78/91(86%)	73/92 (79%)	92/92 (100%)	325/365 (89%)
2006	87/90 (97%)	91/91(100%)	85/92 (92%)	92/92 (100%)	355/365 (97%)
2007	87/90 (97%)	88/91(97%)	90/92 (98%)	90/92 (98%)	355/365 (97%)
2008	89/91 (100%)	89/91 (98%)	91/92 (99%)	92/92 (100%)	361/366 (99%)
2009	90/90 (100%)	89/91(98%)	92/92 (100%)	88/92 (96%)	359/365 (98%)
2010	83/90 (92%)	78/91(86%)	82/92 (89%)	83/92 (90%)	326/365 (89%)
2011	81/90 (90%)	88/91 (97%)	91/92 (99%)	89/92 (97%)	349/365 (96%)

C. HIGH WIND EXCEPTIONAL EVENT DATA EXCLUSIONS

1. Exceptional Events Rule and High Wind Guidance:

In 2007, EPA promulgated the Exceptional Events Rule[2] (EER) that replaced earlier EPA Natural Events Policy (NEP) guidance[3]. Recently, EPA proposed supplemental draft High Wind Guidance[4] (HWG) that recommends the criteria necessary for the exclusion of data influenced by high wind exceptional events. The purpose of excluding high wind data from the determination of an area's attainment status is associated with a state's inability to implement particulate matter control measures for sources that are not reasonably controllable or preventable (nRCP) because all reasonable best available control measures (BACM) are overwhelmed by high winds.

The following is an excerpt from the draft HWG (see p.3) that pertains to the level of analysis necessary for demonstrating whether an event meets the nRCP criteria:

> *The degree of event-specific information and data necessary for demonstrating "not reasonably controllable or preventable" will generally be less for sustained wind speeds at or above the high wind threshold and greater for speeds below that the threshold. The high wind threshold is the minimum threshold wind speed capable of overwhelming reasonable controls on anthropogenic sources (i.e., significant emissions from controlled sources) or causing emissions from natural undisturbed areas. The EPA recommends that air agencies establish area-specific high wind thresholds based on local or applicable conditions and*

[2] Treatment of Data Influenced by Exceptional Events, see 72 FR 13560, March 2007

[3] EPA memorandum entitled "Areas Affected by PM-10 Natural Events" Mary D. Nichols, May 30, 1996

[4] Draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule, EPA June 2012.

information. If an agency is unable to develop an area-specific high wind threshold, the EPA will accept a threshold of a sustained wind of 25 mph for areas in the West provided the agencies submit evidence of this as the level at which they expect stable surfaces (i.e., controlled anthropogenic and undisturbed natural surfaces) to be overwhelmed. In identifying a high wind threshold, the EPA does NOT intend to set a bright line as to what speed constitutes a high wind dust event or to categorically concur with all events with sustained winds above a given threshold.

The draft high wind guidance suggests that in the absence of area specific information such as local soil studies, a minimum sustained wind speed threshold of 25 mph is sufficient to entrain particles from stable surfaces in the West provided the state submits evidence to support this assertion. The Division believes the following analysis provides convincing evidence that sustained winds above 25 mph do overwhelm all reasonable BACM controls for the Lamar area. Consequently, an event involving sustained wind speeds above the 25 mph threshold could be subject to a less rigorous analysis in the exceptional event demonstration. Sustained winds are generally calculated as wind speed averaged over a period of at least one minute and should be averaged over a time frame capable entraining or suspending particulate matter.

Prior to the issuance of the proposed EPA HWG, the Division has consistently used hourly average winds or an estimate of an hourly average winds for determining the level of "sustained" winds in each exceptional event analysis. For example, most of the high wind exceptional event technical support documents prepared by the Division include the following language:

"The 30 mph blowing dust threshold applies to hourly average winds. In most cases, these recorded speeds are not hourly average speeds but represent an instantaneous reading or several-minute average. If these spot observations show that speeds are above the 30 mph threshold for successive hours, then it can be reasonably assumed that hourly average winds are also above 30 mph.

Similarly, the EPA draft guidance states:

"*6.3.2.2 Consideration of wind speed*

The demonstration should indicate what the expected high wind threshold is for the local area and whether the sustained wind speed exceeded this level (See Appendix A2 and A3 for information on developing a high wind threshold). The wind speed data do not necessarily have to be at the location of the exceedance, but they should represent the source area generating the emissions. Generally, the EPA will accept that high winds could be the cause of a high 24-hour average PM10 or PM2.5 concentration if there was at least one full hour in which the hourly average wind speed was above the area-specific high wind threshold. Potential issues arise when determining the hourly average wind speed if wind speeds are not recorded at specified intervals throughout each hour. While some sources of wind speed data use hourly averages, other data sources employ 1 - 5 minute ("short-period") averages. When the available wind speed data consist of only the wind speed during a fixed short period of each hour (e.g.,

the first or last five minutes of each hour) or the wind speed during the variable short period when wind speed was at its maximum during the hour, the EPA will generally accept that the hourly average wind speed was above the threshold if the reported short-period wind speed was above the threshold. Where wind speed is recorded at specified intervals throughout each hour, agencies should use all recorded data to calculate the hourly average wind speed.[5] *EPA may, however, consider multiple occurrences of high wind measured at these shorter averaging times as part of the weight-of-evidence demonstration. At a minimum, demonstrations should include the maximum sustained wind speed for each hour of the event and also the number of periods above the high wind threshold.*

The EPA notes that The National Climate Center has started archiving the 2-minute winds for every 2-minute period of each hour for all ASOS stations in the country. Almost all sites have data since March 2005, with most archiving data since 2000. The EPA has further developed a preprocessor to AERMOD, called AERMINUTE, that takes short-period wind speed observations and calculates an hourly average wind that can be fed into AERMET, the AERMOD meteorological processor. The AERMINUTE output is user friendly. AERMET can also accept, process, and calculate hourly average wind speeds from sub-hourly data with a resolution equal or greater than 5-minutes from sources other than AERMINUTE.

The EPA will consider shorter-term "snapshots" of wind data such as National Weather Service hourly summaries as part of the weight-of-evidence demonstration."

The word "sustained does refer to a one or two-minute average in other meteorological contexts. In more recent exceptional event demonstrations, the Division has been addressing the threshold issue with the following language:

"EPA's May 2, 2011 draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule states —Empirical evidence shows that a sustained wind speed of 25 mph is typically the minimum wind speed needed to entrain particles from many stable surfaces (i.e., undisturbed/natural surfaces with a crust or disturbed surfaces that have been restabilized) in the western U.S. where rainfall is seasonal (see Appendix A), and thus is a useful threshold for setting differential expectations for the detail to be included in a demonstration that dust from a wind event was not reasonably controllable or preventable.|| In Eastern Colorado it has also been shown that wind speeds of 30 mph or greater and gusts of 40 mph or greater can cause blowing dust (see references for the Natural Events Action Plan for High Wind Events – Lamar, Colorado and the Technical Support Document for the January 19, 2009 Lamar Exceptional Event and Attachment A - Grand Junction, Colorado, Blowing Dust

[5] While the National Weather Service defines a "sustained wind" as the wind speed determined by averaging observed values over a two-minute period, the EPA believes that it would take a longer period of high wind speeds to raise enough dust to significantly influence measured 24-hour average values of PM10 or PM2.5

Climatology). Sustained winds of 25 mph and wind gusts of 40 mph will be used for blowing dust thresholds in this report."

2. Lamar Exceptional Events Analysis:

The Lamar area experiences high wind events that typically occur over the period November through May when regional weather patterns create strong pressure gradients which can cause strong winds and significant blowing dust across the plains of eastern Colorado, western Kansas and western Nebraska and the arid regions of the Four Corners states.

As indicated in the PM10 monitoring data, a number of exceedances of the 24-hour PM10 standard have been recorded that appear to be associated with regional high-wind events. Table 5 identifies the all exceedances of the 24-hour PM10 NAAQS for both the Power Plant and Municipal Complex monitors over the past 11 years and the current status of these events.

Table 5: Lamar Area PM10 Exceedances (2001-2011)

Event Date	Monitor Site	24-hr PM10 Value [µg/m3]	Data Flag	Filing Status/EPA Review
04/11/01	Power Plant	152	none	Event not flagged
02/09/02	Power Plant	246	High Wind	EPA Concurrence on Flag
03/07/02	Power Plant	246	High Wind	EPA Concurrence on Flag
05/21/02	Power Plant	196	High Wind	EPA Concurrence on Flag
05/21/02	Municipal	183	High Wind	EPA Concurrence on Flag
06/20/02	Power Plant	181	High Wind	EPA Concurrence on Flag
06/20/02	Municipal	162	High Wind	EPA Concurrence on Flag
04/05/05	Power Plant	203	High Wind	EPA Concurrence on Flag
04/05/05	Municipal	164	High Wind	EPA Concurrence on Flag
05/02/08	Power Plant	367	High Wind	*EE demo submitted to EPA*
05/22/08	Power Plant	227	High Wind	*EE demo submitted to EPA*
01/19/09	Power Plant	174	High Wind	*EE demo submitted to EPA*
01/19/09	Municipal	173	High Wind	*EE demo submitted to EPA*
02/06/09	Power Plant	233	none	Event not flagged
03/05/09	Municipal	176	High Wind	Flagged – Not submitted
03/26/09	Power Plant	171	none	Event not flagged
04/03/11	Power Plant	169	High Wind	Prelim Analysis in Plan
11/05/11	Power Plant	192	High Wind	Prelim Analysis in Plan

2008 Events

There were two exceedances of the standard in 2008 that were clearly associated with high wind events. The Division submitted the technical analysis for these events to EPA. The following links provide access to the documents:

http://www.colorado.gov/airquality/documents/TSD_Lamar_Event_Update_050208.pdf

http://www.colorado.gov/airquality/documents/TSD_Lamar_Event_052208.pdf

2009 Events

There were five exceedances of the standard in 2009 that were clearly associated with high wind events. The Division submitted the technical analysis for the two January 19th events to EPA. The following link provides access to the document.

http://www.colorado.gov/airquality/documents/TSD_Blowing_Dust_Event_011909.pdf

The Lamar Power Plant PM10 monitor recorded two high-wind exceedances of the 24-hour PM10 standard, 233 µg/m3 on February 6th and 171 µg/m3 on March 26th that were not flagged by the Division because of a data tracking oversight. Unfortunately, the data flagging requirements prescribed in the EPA regulations (Treatment of Air Quality Monitoring Data Influenced by Exceptional Events), under 40 CFR §50.14(c)(iii), do not provide any flexibility for missing a data flag event. Based on wind speed data from the Lamar Municipal Airport for the two unflagged exceedances in 2009 (see Appendix B), it appears that the February 6th event had predominantly westerly winds ranging 29-38 miles per hour (mph) over a 6-hour period with peak gusts over 49 mph, while the March 26th event had predominantly north easterly winds ranging 28-33 mph over a 4-hour period with peak gusts over 40 mph. Consequently, based on the draft EPA guidance, both events appear to have sustained wind speeds that are over the suggested 25 to 30 mph thresholds and gusts over 40 mph, thus had these events been flagged, it is very likely that these data points would have been excluded.

The Municipal Complex PM10 monitor recorded a 176 µg/m3 on March 5th that was flagged by the Division as a high wind event; however, the Division did not submit a technical analysis before the regulatory deadline because of resource limitations. Based on wind speed data from the Lamar Municipal Airport for this flagged but not submitted to EPA exceedance (see Appendix B), it appears that the March 5th event had predominantly westerly winds ranging 26.5 – 39 miles per hour (mph) over a 10-hour period with peak gusts over 50 mph. Consequently, this event appears to have sustained wind speeds that are over the thresholds, thus had this event been flagged, it is very likely that this value would have been excluded.

2011 Events

The Division has performed a preliminary analysis (see Appendix B) of the two events that occurred in 2011, which clearly indicates high wind contributed to the PM10 exceedances. A complete analysis of the 2011 high wind events at the Power Plant monitoring site are not due to EPA until the November 1, 2014.

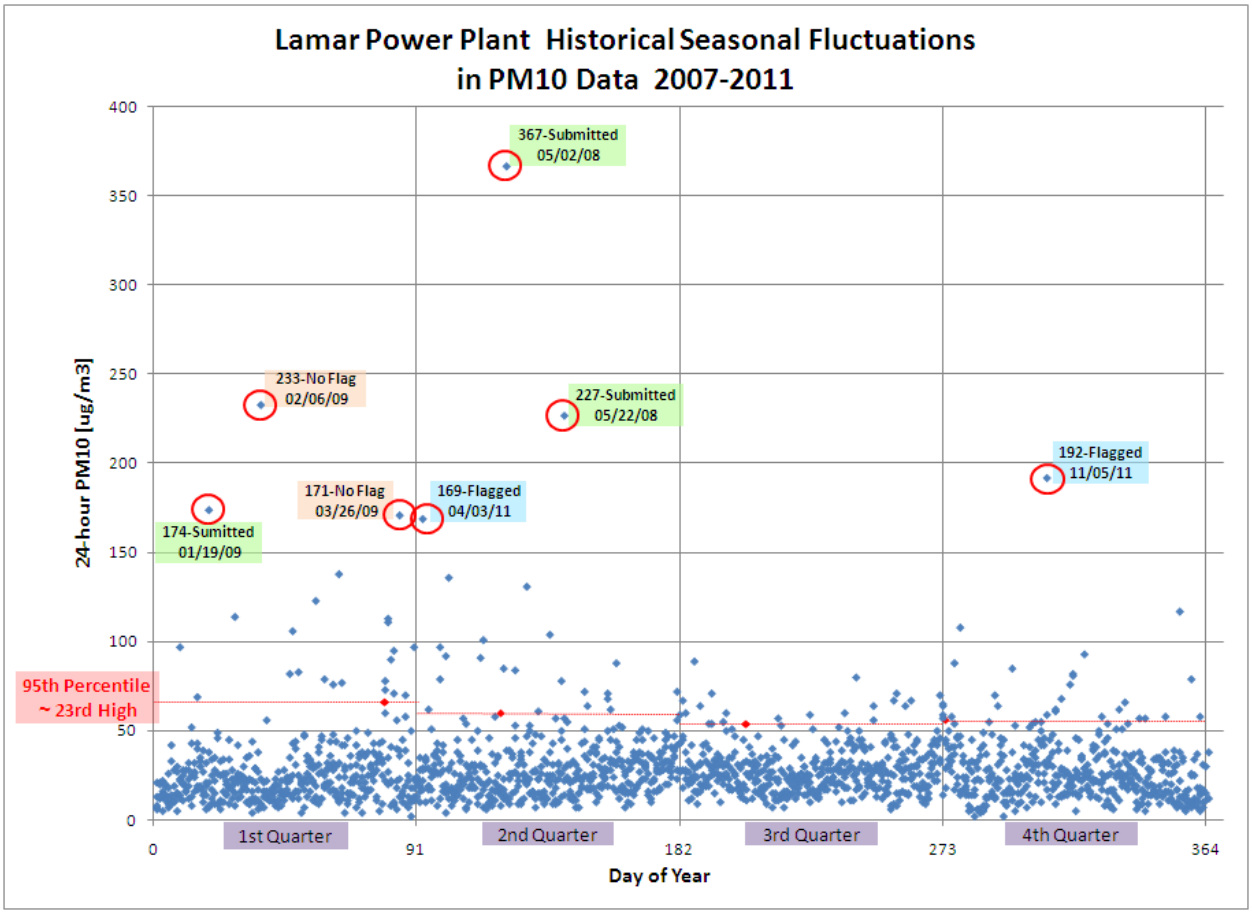
3. Historical Seasonal Fluctuations:

Additionally, the preamble of the Exceptional Event Rule (EER) states *"For extremely high concentrations relative to historical values (e.g., concentrations greater than the 95th percentile), a lesser amount of documentation or evidence may be required to demonstrate that the event affected air quality."* See 72 FR 13569. Accordingly, those

values that are extremely high relative to historical norms may be subject to a less rigorous technical analysis because of the obvious rarity of such events.

Figure 2 provides a historical seasonal evaluation of daily PM10 fluctuations over the 5-year period (2007-2011) involving 1,820 daily PM10 concentrations recorded at the Power Plant PM10 monitor.

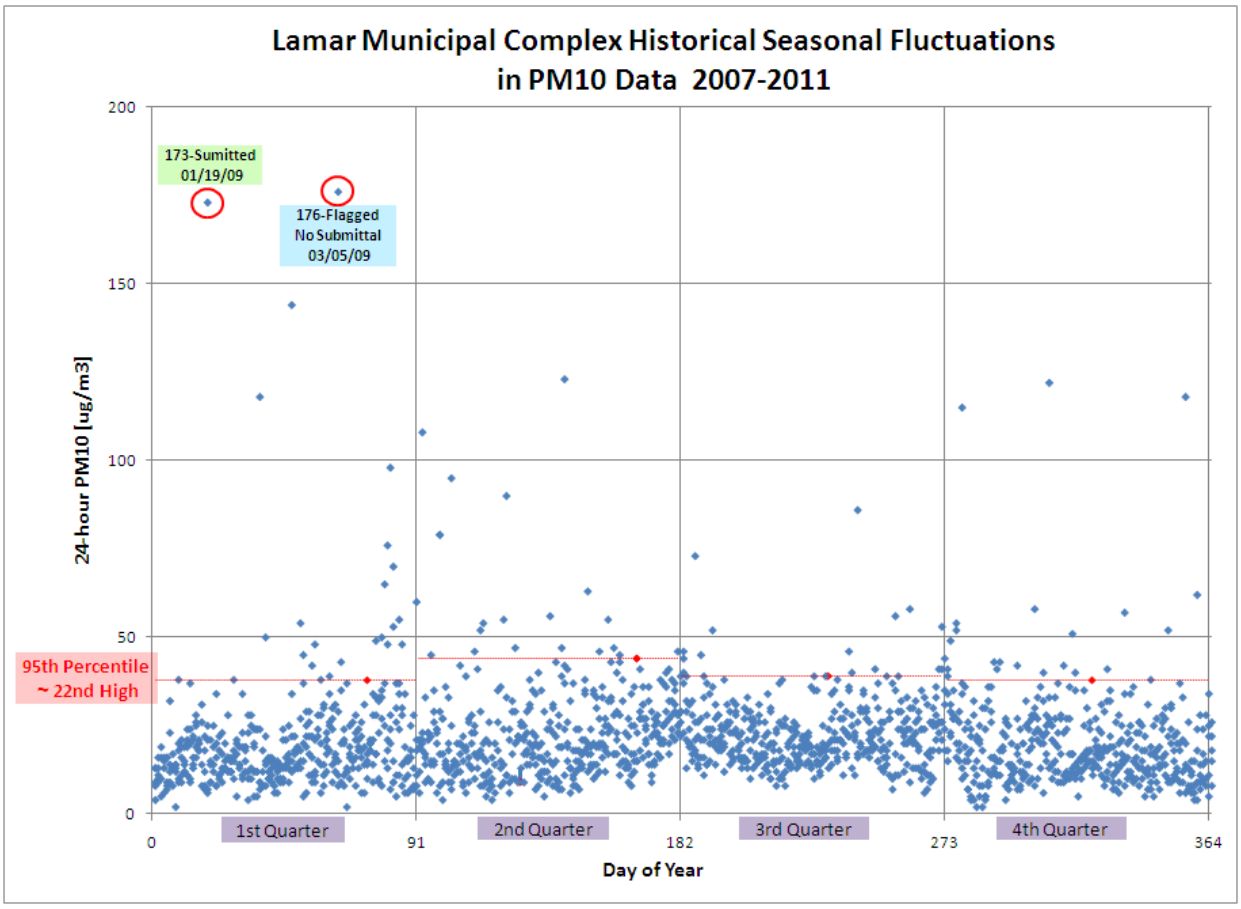
Figure 2: Lamar Power Plant (08-099-0001) – Historical Seasonal Fluctuations



The daily Power Plant values over the 24-hour PM10 NAAQS are circled in red and are associated with seasonal high wind events that exceed the 99th percentile (quarterly basis) which suggest exceptional events requiring less rigorous demonstrations. The red horizontal lines denote the 95th percentile (1,820*(1-.95)/4 = 23rd high) for the four quarters. As indicated in the above figure, high PM10 values appear to correspond with the seasons when Lamar experiences high wind events (e.g. late fall through late spring).

Figure 3 provides a historical seasonal evaluation of daily PM10 fluctuations over the 5-year period (2007-2011) involving 1,750 daily PM10 concentrations recorded at the Municipal Complex Plant PM10 monitor.

Figure 3: Municipal Complex (08-099-0002) – Historical Seasonal Fluctuations



The daily Municipal Complex values over the 24-hour PM10 NAAQS are circled in red and are associated with seasonal high wind events that exceed the 99th percentile (quarterly basis) which suggest exceptional events. The red horizontal lines denote the 95th percentile (1,750*(1-.05)/4 = 22nd high) for the four quarters.

The above 144 µg/m3 PM10 concentration (recorded in 2009) was flagged as a high wind event but is included in the design value determination because the value is below the level of the 24-hour PM10 NAAQS. The above 176 µg/m3 PM10 concentration (recorded in 2009) was flagged as a high wind exceptional event, but the Division could not complete the technical analysis before the March 30, 2012 submittal deadline, thus this exceedance is included in the design value calculation.

In conclusion, all Lamar PM10 exceedances are clearly rare events that are well above the 95th percentile and occur in the three seasons associated with high wind events.

D. DESIGN VALUE DETERMINATION

The "design value (DV)" is the critical air quality value from which the maintenance plan is based. The design value, and the conditions that occurring on the day which it was measured, are utilized to develop emission inventories and serve as a baseline for modeling ambient concentrations into the future. The selection of this design value utilized EPA's table look-up method from EPA's "PM10 SIP Development Guideline" document. According to the guidance, the design concentration at the Power Plant site is the fourth high PM10 concentration based on number of daily monitoring values (1,093) over the 3-year period (2009 – 2011). However, the design concentration at the Municipal Complex site is the third high based on a lower number of daily monitoring values (1,034) over the same 3-year period.

Table 6 provides the status of all exceedances of the PM10 NAAQS, since 2001, to ensure the correct values are used in determining the DV for both the Power Plant and Municipal Complex monitoring sites.

Table 6: Lamar Area PM10 Exceedances (2001-2011)

Event Date	Monitor Site	PM10 Value [µg/m3]	Data Flag	EPA Review/Filing Status	Treatment of Data in DV calculation (2009-2011)
04/11/01	Power Plant	152	none	Event not flagged	*Not considered in DV*
02/09/02	Power Plant	246	High Wind	EPA Concurrence	*Not considered in DV*
03/07/02	Power Plant	246	High Wind	EPA Concurrence	*Not considered in DV*
05/21/02	Power Plant	196	High Wind	EPA Concurrence	*Not considered in DV*
05/21/02	Municipal	183	High Wind	EPA Concurrence	*Not considered in DV*
06/20/02	Power Plant	181	High Wind	EPA Concurrence	*Not considered in DV*
06/20/02	Municipal	162	High Wind	EPA Concurrence	*Not considered in DV*
04/05/05	Power Plant	203	High Wind	EPA Concurrence	*Not considered in DV*
04/05/05	Municipal	164	High Wind	EPA Concurrence	*Not considered in DV*
05/02/08	Power Plant	367	High Wind	*Under EPA Consideration*	*Not considered in DV*
05/22/08	Power Plant	227	High Wind	*Under EPA Consideration*	*Not considered in DV*
01/19/09	Power Plant	174	High Wind	*Under EPA Consideration*	*Excluded from DV*
01/19/09	Municipal	173	High Wind	*Under EPA Consideration*	*Excluded from DV*
02/06/09	Power Plant	233	none	Event not flagged	Included in DV
03/05/09	Municipal	176	High Wind	Flagged – Not submitted	Included in DV
03/26/09	Power Plant	171	none	Event not flagged	Included in DV
04/03/11	Power Plant	169	High Wind	Prelim Analysis	*Excluded from DV*
11/05/11	Power Plant	192	High Wind	Prelim Analysis	*Excluded from DV*

The “controlling” design concentration, or design value for an area with two monitors is the higher of the two values.

From the above table, the Division assumes that EPA will concur on four high-wind exceptional events thereby allowing exclusion of these data values from the determination of the design value. Three other exceedances of PM10 standard are included in the design value calculation even though these events appear to be exceptional and are associated with high winds. Table 7 provides the determination of the design value for both the Power Plant monitor and the Municipal Complex monitor.

Table 7: PM10 Design Value Determination for 3-Year Period (2009 – 2011)

Lamar Power Plant [08-099-0001]			Lamar Municipal Complex [08-099-0002]		
Rank	PM10 Concentration [µg/m3]	Date	Rank	PM10 Concentration [µg/m3]	Date
1st	233	February 6, 2009	1st	176	March 5, 2009
2nd	171	March 26, 2009	2nd	144	February 17, 2009
3rd	138	March 5, 2009	3rd	**122**	November 5, 2011
4th	**136**	April 13, 2010			

As discussed above, the siting deficiencies associated with the Lamar Power Plant monitor should preclude the use of that data to assess Lamar’s ongoing compliance with the PM10 NAAQS. Accordingly, the revised maintenance plan PM10 design value, based on the Lamar Municipal Complex data is *122 µg/m3*. Alternatively, even if the Lamar Power Plant data were included in the analysis, the revised maintenance plan PM10 design value would be *136 µg/m3*.

SECTION 3: STATE IMPLEMENTATION PLAN APPROVAL

The following presents a brief summary of the development and the approval of the Lamar PM10 nonattainment SIP Element.

A. 1993 SIP ELEMENT

A Lamar SIP Element was adopted by the AQCC in April 1993 and became effective April 1993. The Lamar SIP Element was approved by the EPA on June 9, 1994 (59 FR 14015). The Plan did not include mandatory control measures as they were not needed to demonstrate attainment.

B. PM10 REDESIGNATION REQUEST/MAINTENANCE PLAN

The Lamar PM10 Redesignation Request/Maintenance Plan was adopted by the Commission on November 15, 2001. The U.S. Environmental Protection Agency approved the plan on October 25, 2005 which became effective on November 25, 2005.

SECTION 4: PERMANENT AND ENFORCEABLE IMPROVEMENT IN AIR QUALITY

The State must demonstrate, based on Section 107(d)(3)(E) of the CAA, that the improvement in air quality leading to attainment of the NAAQS and the redesignation request is based on permanent and enforceable measures, and that the reductions are not the result of temporary reductions in emissions or unusually favorable meteorology. For the Lamar area, non-attainment was largely the result of blowing dust due to high wind events. As these are naturally occurring and uncontrollable, no mandatory controls have been required for the Lamar area. The area was able to demonstrate attainment in the 1993 State Implementation Plan without additional control measures.

A. OVERVIEW

Lamar was designated a non-attainment area in 1990 due to high TSP values and high PM10 concentrations.

Over the last ten years, the area has experienced a decline in growth and population, although it is not clear whether the decline has had any influence on monitored PM10 concentrations. The Colorado State Demographer's Office reports that between 2000 and 2010, the population of Lamar declined by a -1.3% annual rate and the population of Prowers County declined by a -1.4% annual rate. Similarly, economic conditions in Prowers County declined by a -0.5% annual rate.

A review of the Colorado Department of Transportation's (CDOT) information for the Lamar area indicates average daily traffic is projected to annually increase at a rate of about 1.4%. Despite growth in traffic, attainment of the PM10 NAAQS continues to be demonstrated, and relatively few concentrations above 100 ug/m3 are measured. High wind events have resulted in occasional exceedances of the PM10 NAAQS, but these natural events are excluded from determination of non-attainment/attainment.

Local economic conditions might be a contributing factor in maintaining lower ambient PM levels in the Lamar attainment/maintenance area because Prowers County tax revenue has experienced a slight decline of about 3.6% over the past eight years. Generally, it is assumed that growth in population and sales tax revenue are indicators of increased activities that could cause increased PM10 emissions and the potential for elevated PM10 concentrations.

Aside from infrequent high wind events, favorable meteorology seems to be an unlikely reason for the typically low PM10 concentrations in the Lamar area. Since 2007, there have been nine exceedances of the 24-hour PM NAAQS but all appear to be associated with high wind events. Generally, the eastern plains of Colorado experience variable high wind meteorological conditions over the fall to spring period but there is little evidence, aside from the extreme drought in the area in 2002, to suggest that meteorological conditions experienced over the more recent years are anything but typical" (although it is difficult to make definitive conclusions based on short-term meteorological records). Consequently, the APCD concludes that the good air quality

in the Lamar area is due the implementation of emission reduction control measures, except for high wind events where BACM controls are overwhelmed.

B. CONTROL MEASURES

The following describes the control measures that have been implemented in the Lamar area:

1. Control of Emissions from Stationary Sources

Although there are few stationary sources located in the Lamar attainment/maintenance area, the State's comprehensive permit rules will limit emissions from any new source that may, in the future, locate in the area. These rules include: 1) Regulation No. 1, "Emission Control Regulation for Particulates, Smoke, Carbon Monoxide and Sulfur Oxides;" 2) Regulation No. 3, "Air Pollution Emission Notices, Construction Permits and Fees, Operating Permits, and Including the Prevention of Significant Deterioration;" 3) Regulation No. 4, "New Woodstoves and Woodburning Appliance Use During High Pollution Days;" 4) Regulation No. 6, "Standards of Performance for New Stationary Sources;" and 5) the "Common Provisions" regulation.

Regulation No. 1 applies to fugitive dust, fuel burning equipment, incinerators, and certain manufacturing processes as potential sources of PM10. Regulation No. 1 Section III.D requires new or existing sources of fugitive particulate emissions to employ such control measures and operating procedures necessary to minimize fugitive particulate emissions including a 20% opacity limitation, a prohibition on off-property transport of visible emissions and no emission of fugitive particulates that create a nuisance. Each subject source is required to obtain an emission permit under Regulation No. 3 must submit to the Division a fugitive particulate emission control plan that specifies all available practical methods which are technologically feasible and reasonable to prevent and control fugitive particulate emissions. Examples of subject sources include unpaved roadways with vehicle traffic over 200 vehicles per day (attainment areas); construction activities; storage and handling of materials; mining activities; haul roads/trucks, tailings piles and ponds; demolition activities and blasting activities; sandblasting operations and livestock confinement operations.

The Common Provisions, and Parts A and B of Regulation No. 3, are already included in the approved State-wide SIP. Regulation No. 3 requires all sources with uncontrolled actual PM10 emissions equal to or exceeding five (5) tons per year to obtain a permit.

Regulation No. 6 implements the federal standards of performance for new stationary sources (NSPS), which includes incorporation of Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO). NSPS OOO applies to fixed or portable sand and gravel operations that exceed defined production levels. The maintenance plan makes no changes to these regulations. This reference to Regulation No. 6 shall not be construed to mean that this regulation is included in the SIP.

As indicated above, emissions from new or modified major stationary sources emissions of PM10 are controlled under Regulation No. 3's nonattainment area new

source review (NSR) permitting requirements. The NSR provisions require all new and modified major stationary sources in non-attainment areas to apply emission control equipment that achieves the "lowest achievable emission rate" (LAER) and to obtain emission offsets from other stationary sources of PM10.

The EPA approval of the original PM10 Maintenance Plan, effective on 11/25/05, reinstates the prevention of significant deterioration (PSD) permitting requirements in the Lamar Attainment/Maintenance area. The federal PSD requirements apply to new or modified major stationary sources which must utilize "best available control technology" (BACT). This requirement will help to ensure that PM10 emissions in the Lamar Attainment/Maintenance area will continue to be minimized in the future.

2. Federal Motor Vehicle Emission Control Program (FMVECP)

The FMVECP has reduced PM10 emissions through a continuing process of requiring diesel engine manufacturers to produce new vehicles that meet tighter and tighter emission standards. As older, higher emitting diesel vehicles are replaced with newer vehicles through fleet turnover; tailpipe PM10 emissions in the Lamar area will be further reduced.

3. Voluntary and State-Only Measures

In addition to the measures discussed above, there are other activities that result in the reduction of PM10 emissions. Some notable examples include:

- The City of Lamar has historically cleaned their streets in town throughout the winter and spring using street sweepers. The frequency of this voluntary effort is determined by weather.
- The City of Lamar and areas immediately surrounding require that new development have paved streets.

These strategies are considered to be voluntary local initiatives and State-only requirements, and are intended to reduce PM10 emissions. These strategies are not intended to be federally enforceable.

4. State Implementation Plan Measures

- Any owner or operator responsible for the construction or maintenance of any existing or new unpaved roadway which has vehicle traffic exceeding 200 vehicles per day in the attainment/maintenance area and surrounding areas must stabilize the roadway in order to minimize fugitive dust emissions[6]. These statewide requirements are defined in detail in the AQCC's Regulation No. 1.

6 See Regulation No. 1, III.D.2.a.(i). Particulate matter requirements are specified in section III of Regulation Number 1 which was approved into the Colorado State Implementation Plan on 04/17/1997, [62 FR 18716].

C. CLEAN AIR ACT SECTION 110 AND PART D REQUIREMENTS

For the purposes of redesignation, all of the requirements of CAA Section 110 and Part D applicable to the area must first be met. The requirements of Section 110 and Part D applicable to the Lamar area are already included in the SIP for Colorado and have already been approved by EPA. In particular, see EPA's final approval actions for the Lamar SIP Element (Federal Register, Vol. 59, No. 110, June 9, 1994).

SECTION 5: MAINTENANCE PLAN

A. REQUIREMENTS

Section 107(d)(3)(E) of the CAA provides that for an area to be redesignated to an attainment classification, EPA must fully approve a maintenance plan which meets the requirements of CAA Section 175A. The maintenance plan will constitute a SIP revision and must provide for maintenance of the relevant NAAQS in the area for at least ten years after redesignation. Since the requirement is for ten years after redesignation, some lead time for the EPA approval process (up to 18 months per CAA Section 107(d)(3)(D)) should be considered in establishing the maintenance year, which the State determines to be 2021. An additional requirement (Section 175A(b)) is the submittal of a SIP revision eight years after the original redesignation request/maintenance plan is approved that provides for maintenance of the NAAQS for an additional ten years following the first ten-year period. The State of Colorado has satisfied this commitment by submitting this revised maintenance plan as required by the CAA and EPA requirements.

Section 175A further states that the plan shall contain such additional control measures as necessary to ensure maintenance. All current nonattainment area control measures shall remain in place, except for the most stringent NSR stationary source permitting requirements (see Section 4.B.3.). The maintenance plan shall contain a contingency plan to ensure the prompt correction of any unforeseen violation of the PM10 NAAQS. Failure to maintain the NAAQS and triggering of the contingency plan will not necessitate a revision of the SIP Element, unless required by the EPA Administrator, as stated in CAA Section 175A(d).

The provisions that are addressed in this maintenance plan include emission inventories (for a base year and a future year), a maintenance demonstration, an emission budget, an approved monitoring network, verification of continued attainment, and a contingency plan.

B. EMISSION INVENTORIES

The below emission inventories include the 2010 base year, 2020 interim year and the 2025 maintenance year. These inventories reflect the base and projected conditions in the Lamar Attainment/Maintenance Area, and account for the emission control measures that have been adopted as part of the original redesignation request and the previous 10-year maintenance plan. Unlike the previous Lamar plans where the emission inventories were based on a grid system of the attainment/maintenance area and an average winter-time day, the updated emission inventories, for 2010, 2020 and 2025, are based on average daily winter/spring emissions. Consequently there are significant differences between the emission inventories in the previous plan and this updated PM10 Maintenance Plan.

1. 2010 Base Emission Inventory

The 2010 base emission inventory for the Lamar Attainment/Maintenance Area is presented below. This updated emission inventory incorporates the most current estimates for the following sixteen (16) source categories:

- Point Sources (Actual Emissions used in 2010)
- Helicopters
- Construction
- Fuel Combustion
- Railroads
- Structure Fires
- Wood-burning
- Paved Road Dust
- Unpaved Road Dust
- Non-Road Commercial Equipment
- Non-Road Construction and Mining Equipment
- Non-Road Industrial Equipment
- Non-Road Lawn and Garden Equipment (Com)
- Non-Road Lawn and Garden Equipment (Res)
- Non-Road Railroad Equipment
- Highway Vehicles

The mobile source inventories (unpaved road dust, paved road dust, and highway vehicles) have been updated to reflect the following:

- Latest traffic (VMT) estimates from the Colorado Department of Transportation (CDOT)
- Revised emission factors and methods for determining paved road emissions
- Road paving of unpaved roads that has occurred in the area
- Vehicle exhaust emissions based on most up-to-date fleet mix using the EPA MOVES model (version 2010a)

All emission estimates were prepared by using EPA-approved methods and assigned to the area comprising the Attainment/Maintenance area.

The Lamar Attainment/Maintenance Area is the urbanized portion of the City of Lamar that existed in 1992. No commercial agriculture activities are practiced in the Lamar Attainment/Maintenance Area.

Table 8 presents the 2010 PM10 emission estimates for each source category pounds per winter/spring average day and tons per year.

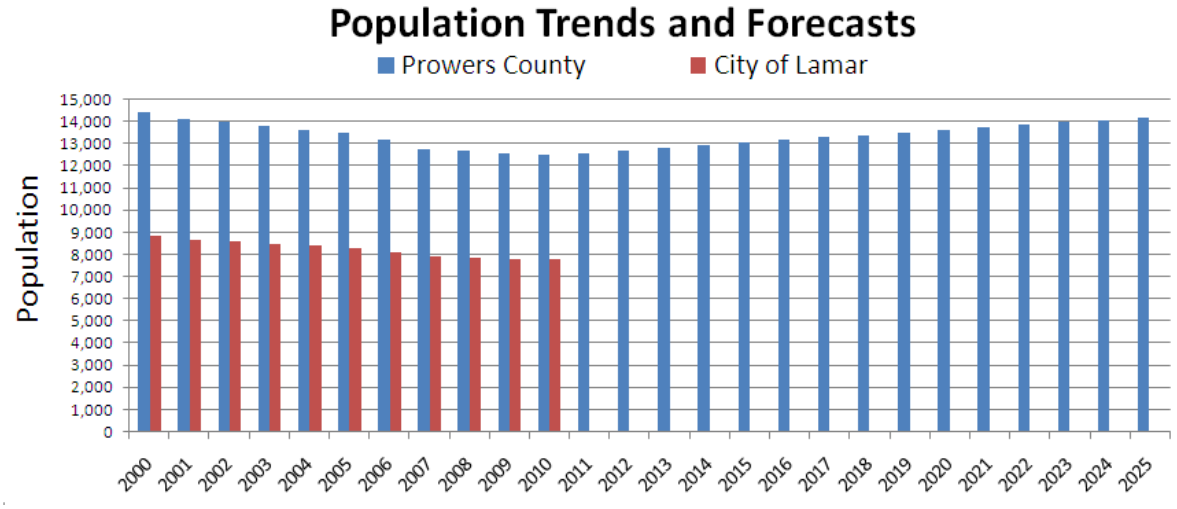
Table 8: 2010 PM10 Emission Inventory - Lamar Attainment/Maintenance Area

Source Category	2010 PM10 [lbs/day]	2010 PM10 [tons/yr]
Point Sources (2010 Actual Emissions)	186.3	34.0
Helicopters	0.1	0.0
Construction	257.7	47.0
Fuel Combustion	0.6	0.1
Railroads	1.0	0.2
Structure Fires	0.5	0.1
Wood-burning	116.6	21.3
Paved Road Dust	194.7	35.5
Unpaved Road Dust	229	41.8
Non-Road Commercial Equipment	2	0.4
Non-Road Construction & Mining Equipment	75.8	13.8
Non-Road Industrial Equipment	1.7	0.3
Non-Road Lawn & Garden Equipment (Com)	0.6	0.1
Non-Road Lawn & Garden Equipment (Res)	0.5	0.1
Non-Road Railroad Equipment	0	0
Highway Vehicles (Exhaust, Brake & Tire Wear)	292.1	53.3
Totals:	1,359	248.0

Population Trends in Lamar and Prowers County

The population trend data (see Figure 4 below) for Prowers County and the City of Lamar over the most recent 10-year period (2000-2010) indicates a gradual annual decline of about -1.4% and -1.3% respectively. The State Demography Office (SDO) anticipates a gradual increase in county population will begin in 2011 and continue into the future. Population projections for smaller towns/cities are not typically done by the SDO, consequently, the Prowers County projections must be used as an indicator of future growth for the Lamar area. The Prowers County/City of Lamar annual population growth rate over next 15 years (2010-2025) is projected at about 0.88%

Figure 4: Population Trends and Forecasts for Prowers County and City of Lamar



2. 2020 Interim Emission Inventory

Table 9 presents the 2020 PM10 emission estimates for each source category in pounds per winter/spring average day and tons per year.

The 2020 point source emissions are increased to potential to emit for each stationary source in the maintenance area. Woodburning, construction and unpaved road dust are estimated to increase at a rate of 0.6% per year (or 6% over the 10 year period). Paved road dust is estimated to increase at a rate of 1.41% per year (1.014078 or 14.1% over the 10 year period) based on the Prowers County Highway Database for 2010. The 2020 mobile source tailpipe PM emissions were reduced by an annual compounded rate of 0.34% per year (1.00336 or -3.4% over the 10 year period). The reduction in PM emissions is associated with anticipated fleet turnover projected by MOVES. Detailed information on the growth rate may be found in the Emission Inventory Technical Support Document.

The road paving that the City of Lamar and Powers County plan on completing is not assumed in the 2020 inventory as the paving is considered voluntary and not enforceable by the State.

Table 9: 2020 PM10 Emission Inventory - Lamar Attainment/Maintenance Area

Source Category	2020 PM10 [lbs/day]	2020 PM10 [tons/yr]	% Increase over 10-yrs
Point Sources (Potential Emissions)	205.5	37.5	10%
Helicopters	0.1	0.0	0%
Construction	273.1	49.8	6%
Fuel Combustion	0.6	0.1	8%
Railroads	1.1	0.2	5%
Structure Fires	0.5	0.1	0%
Wood-burning	123.5	22.5	6%
Paved Road Dust	222.1	40.5	14%
Unpaved Road Dust	242.7	44.3	6%
Non-Road Commercial Equipment	1.5	0.3	-23%
Non-Road Construction & Mining Equipment	35.2	6.4	-54%
Non-Road Industrial Equipment	0.7	0.1	-56%
Non-Road Lawn & Garden Equipment (Com)	0.6	0.1	14%
Non-Road Lawn & Garden Equipment (Res)	0.5	0.1	13%
Non-Road Railroad Equipment	0	0	0%
Highway Vehicles (Exhaust, Brake & Tire Wear)	282.3	51.5	-3%
Totals:	1,390	253.7	

3. 2025 Emission Inventory

Table 10 presents the 2025 PM10 emission estimates for each source category pounds per winter/spring average day and tons per year.

The 2025 point source emissions are increased to potential to emit for each stationary source in the maintenance area. Woodburning, construction and unpaved road dust are estimated to increase at a rate of about 0.6% per year (or about 9.4% over the 15 year period). Paved road dust is estimated to increase at a rate of 2.5% per year (1.014078 or 21.1% over the 15 year period). The 2020 mobile source tailpipe PM emissions were reduced by an annual compounded rate of 0.34% per year (1.00336 or -5.0% over the 15 year period). The reduction in PM emissions is associated with anticipated fleet turnover projected by MOVES. Detailed information on the growth rate may be found in the Emission Inventory Technical Support Document.

The road paving that the City of Lamar and Powers County plan on completing is not assumed in the 2025 inventory as the paving is considered voluntary and not enforceable by the State.

The projected 2025 emissions are 1,408 pounds/day are higher than the 2020 interim year emission projections of 1,390 pounds/day. Consequently, since the 2020 interim year emissions are below the 2025 projected emissions, the 2025 demonstration of PM10 NAAQS maintenance is adequate to demonstrate maintenance for all years before 2025.

Table 10: 2025 PM10 Emission Inventory - Lamar Attainment/Maintenance Area

Source Category	2025 PM10 [lbs/day]	2025 PM10 [tons/yr]	% Increase over 15-yrs
Point Sources (Potential Emissions)	205.5	37.5	10%
Helicopters	0.1	0.0	0%
Construction	281.9	51.4	9%
Fuel Combustion	0.7	0.1	17%
Railroads	1.1	0.2	10%
Structure Fires	0.5	0.1	0%
Wood-burning	127.5	23.3	9%
Paved Road Dust	**235.8**	43.0	21%
Unpaved Road Dust	**250.6**	45.7	9%
Non-Road Commercial Equipment	1.3	0.2	-35%
Non-Road Construction & Mining Equipment	23.3	4.3	-69%
Non-Road Industrial Equipment	0.6	0.1	-62%
Non-Road Lawn & Garden Equipment (Com)	0.7	0.1	25%
Non-Road Lawn & Garden Equipment (Res)	0.6	0.1	25%
Non-Road Railroad Equipment	0	0	0%
Highway Vehicles (Exhaust, Brake & Tire Wear)	**277.5**	50.6	-5%
Totals:	1,408	259.9	

The mobile source PM10 emission budget (denoted in bold shading) for the Lamar Attainment/Maintenance area is the sum of PM10 emissions from paved roads, unpaved roads and highway vehicles, which totals 764 lbs/day for 2025 and beyond.

C. MAINTENANCE DEMONSTRATION

In order for this maintenance plan to be complete and approvable, the CAA requires that the maintenance plan provide for continued maintenance of the 24-hour PM10 NAAQS for at least 10 years following EPA's approval of the plan. As stated earlier in this document, attainment of the 24-hour PM10 NAAQS has been demonstrated in the Lamar area and this maintenance demonstration will show continued maintenance of the 24-hour NAAQS through the year 2025.

Data presented throughout this document are utilized to demonstrate continued maintenance of the PM10 NAAQS for the Lamar area. If the 2025 projection is below the 24-hour PM10 NAAQS of 150 ug/m3, then maintenance is demonstrated. Based on the two analysis options presented below, the 24-hr PM10 maintenance concentration projected for 2025 in the Lamar attainment/maintenance area is either **140.2 µg/m3 or 125.6 µg/m3.** Since both projections are below the daily PM standard (150 µg/m3), continued maintenance is demonstrated.

1. Emission Inventory Roll-Forward Analysis

The 1993 SIP Element for Lamar relied upon the use of the emission inventory roll-forward analysis to demonstrate maintenance; consequently the same approach is used below.

Analysis Using Municipal Complex Data:

As discussed above, because of the siting deficiencies with the Lamar Power Plant monitor, the maintenance demonstration for this plan should be based on monitored data from the Lamar Municipal Complex. Based on the analysis presented in Section 2 the design day PM10 concentration is 122 µg/m3. A background concentration of 21 µg/m3 is assumed to occur on any given day in the Lamar area, as described in Section 8.1 of the 1993 SIP Element. The PM10 background concentration is subtracted from the design day PM10 concentration because the background PM10 concentration would remain if all emissions in the emissions inventory were reduced to zero.

Design Day PM10 Concentration:	122 µg/m3
Background PM10 Concentration:	- 21 µg/m3
	101 µg/m3

The following analysis presents the emissions inventory roll-forward approach used to calculate the 2025 maintenance concentration:

$$\frac{PM10_{baseline}}{PM10_{2010\ emissions}} = \frac{PM10_{projection}}{PM10_{2025\ emissions}}$$

Where:

$PM10_{projection}$ = to be calculated (unknown)
$PM10_{baseline}$ = 101 µg/m3 is the baseline PM10 concentration w/o background
$PM10_{2010\ emissions}$ = 1,359 lbs/day is the baseline PM10 emissions
$PM10_{2025\ emissions}$ = 1,408 lbs/day is the projection PM10 emissions

Solving the roll-forward equation for the unknown:

$$\frac{101\ \mu g/m3}{1{,}359\ lbs/day} = \frac{PM10_{projection}}{1{,}408\ lbs/day}$$

$PM10_{projection} = 104.6\ \mu g/m3$

Calculating the 2025 PM10 maintenance concentration:

$PM10_{2025} = PM10_{projection} + background$

$PM10_{2025} = 104.6 + 21.0 =$ **125.6 μg/m3**

Since the $PM10_{2025}$ value is below the 24-hour PM10 NAAQS (150 ug/m3), maintenance of the standard is demonstrated.

Analysis Using Power Plant Data:

Alternatively, if monitored data from the Power Plant is considered, the calculation is as follows:

Design Day PM10 Concentration:	136 μg/m3
Background PM10 Concentration:	- 21 μg/m3
	115 μg/m3

The following analysis presents the emissions inventory roll-forward approach used to calculate the 2025 maintenance concentration:

$$\frac{PM10_{baseline}}{PM10_{2010\ emissions}} = \frac{PM10_{projection}}{PM10_{2025\ emissions}}$$

Where:

$PM10_{projection}$ = to be calculated (unknown)
$PM10_{baseline}$ = 115 μg/m3 is the baseline PM10 concentration w/o background
$PM10_{2010\ emissions}$ = 1,359 lbs/day is the baseline PM10 emissions
$PM10_{2025\ emissions}$ = 1,408 lbs/day is the projection PM10 emissions

Solving the roll-forward equation for the unknown:

$$\frac{115\ \mu g/m3}{1{,}359\ lbs/day} = \frac{PM10_{projection}}{1{,}408\ lbs/day}$$

$PM10_{projection} = 119.2\ \mu g/m3$

Calculating the 2025 PM10 maintenance concentration:

$PM10_{2025} = PM10_{projection} + background$

$PM10_{2025} = 119.2 + 21.0 =$ **140.2 μg/m3**

Since the $PM10_{2025}$ value is below the 24-hour PM10 NAAQS (150 ug/m3), maintenance of the standard is demonstrated.

D. MAINTENANCE PLAN CONTROL MEASURES

There are no mandatory control measures adopted specifically for the Lamar area because the area demonstrates long-term maintenance of the 24-hour PM10 NAAQS without specific controls. This Maintenance Plan retains the elimination of mandatory SIP contingency measures as these are not required for re-designated areas.

The following regulations serve to control PM10 emissions from stationary sources:

- Common Provisions, 5 CCR 1001-2;
- Regulation No. 1, Emission Control Regulation for Particulates, Smoke, Carbon Monoxide and Sulfur Oxides;
- Regulation No. 3, Air Contaminant Emissions Notices, 5 CCR 1001-5;
- Regulation No. 4, New Woodstoves and Woodburning Appliance Use During High Pollution Days;
- Regulation No. 6, Standards of Performance for New Stationary Sources, 5 CCR 1001-8; and
- Certain aspects of the Lamar Natural Events Action.

The Common Provisions, and Parts A and B of Regulation No. 3, are already included in the approved SIP. Regulation No. 6 implements the federal standards of performance for new stationary sources, but is not part of the SIP.

This maintenance plan makes no changes to these regulations. This reference to Regulation No. 6 shall not be construed to mean that this regulation is included in the SIP.

E. PM10 EMISSION BUDGET

Federal “transportation conformity” regulations provide for the use of mobile source emission budgets in making conformity determinations in the area. The emission budget serves as a ceiling on mobile source emissions that federally funded or approved transportation projects must comply or conform.

This revised maintenance plan establishes a mobile source PM10 emission budget for the Attainment/Maintenance area of 764 lbs/day for 2025 and beyond. This budget is the total of the 2025 mobile source PM10 emissions (see Section 5.B.3. above), which includes PM10 emissions from highway vehicles, paved roads, and unpaved roads.

This budget has been adopted in the AQCC’s "Ambient Air Quality Standards for the State of Colorado" regulation.

F. MONITORING NETWORK/VERIFICATION OF CONTINUED ATTAINMENT

The APCD has monitored ambient PM10 concentrations in the Lamar area since 1985. The APCD has operated, and will continue to operate, the Lamar PM10 monitoring network in full accordance with the federal provisions of 40 CFR Part 58 and the EPA-

approved Colorado Monitoring SIP Element. The APCD will also analyze the monitoring data to verify continued attainment of the PM10 NAAQS. This information will provide the necessary information to determine whether the Lamar area continues to attain the PM10 NAAQS. Detailed information regarding the State's monitoring efforts and historical monitoring data can be found in Section 2 of this document.

In addition, the State will track the progress of the maintenance plan through a periodic review (every three years) of the assumptions made in the emissions inventories to assure continued maintenance of the PM10 NAAQS. A revised inventory will be developed if assumptions indicate a significant change in the factor(s) used to develop the attainment inventory.

As discussed in Section 2, the Division submitted a request to EPA in 2011 for the removal of the Lamar Power Plant monitoring site because it does not provide representative data of the public's exposure to PM10. Contingent upon formal EPA approval of the removal request, the Division would need to update and amend the maintenance plan to reflect any changes to the Lamar area monitoring network.

G. CONTINGENCY PLAN

Section 175(A)(d) of the CAA requires that the maintenance plan contain contingency provisions to assure that the State will promptly correct any violation of the PM10 NAAQS that may occur after the redesignation of the area to attainment. EPA's redesignation guidance notes that the State is not required to have fully adopted contingency measures that will take effect without further action by the State. However, the contingency plan should ensure that contingency measures are adopted expediently once the need is triggered. The primary elements of the contingency plan involve the tracking and triggering mechanisms to determine when contingency measures would be needed and a process for implementing appropriate control measures.

1. Tracking

The tracking plan for the Lamar area will consist of monitoring and analyzing PM10 concentrations. In accordance with 40 CFR Part 58, Colorado will continue to operate and maintain a representative PM10 monitoring network for the Lamar area.

2. Trigger and Response

Triggering of the contingency plan does not automatically require a revision of the SIP nor is the area necessarily redesignated once again to nonattainment. Instead, the State will normally have an appropriate time-frame to correct the violation with implementation of one or more adopted contingency measures. In the event that violations continue to occur, additional contingency measures will be adopted until the violations are corrected.

Upon notification of a PM10 NAAQS exceedance not attributed to natural high wind events and blowing dust, the APCD and local government staff in the Lamar area will develop appropriate contingency measure(s) intended to prevent or correct a violation

of the PM10 standard. Information about historical exceedances of the standard, the meteorological conditions related to the recent exceedance(s), and the most recent estimates of growth and emissions will be reviewed. The possibility that an exceptional event occurred will also be evaluated and if appropriate, a request will be sent to EPA for data exclusion along with a technical analysis demonstrating that high winds were associated with the exceptional event. Generally, the Division notifies the Air Quality Control Commission (AQCC) of any PM10 exceedance at least twice during each year, once after the summer season (around October) and after the winter season (around April).

If a violation of the PM10 NAAQS has occurred, a public hearing process at the State and local level will begin. If the AQCC agrees that the implementation of local measures will prevent further exceedances or violations, the AQCC may endorse or approve the local measures without adopting State requirements. If, however, the AQCC finds locally adopted contingency measures to be inadequate, the AQCC will adopt State enforceable measures as deemed necessary to prevent additional exceedances or violations.

Contingency measures will be adopted and fully implemented within one year of a PM10 NAAQS violation. Any State-enforceable measures will become part of the next revised maintenance plan, submitted to the Colorado Legislature and EPA for approval.

3. Potential Contingency Measures

The APCD and local government staff may choose one or more of the following contingency measures to recommend to local officials and the AQCC for consideration. Contingency measures will be selected that quickly bring the area back into compliance with the PM10 NAAQS and that specifically meet the needs of Lamar area. It is likely that no federal or State monies will be available to fund the implementation of the selected contingency measure(s). Most, if not all, of the costs will be borne by local citizens and governments, local businesses, and State government agencies.

- Street sweeping requirements
- Road paving requirements
- Street sand specifications
- Woodburning restrictions
- Use of alternative de-icers
- Re-establishing new source review permitting requirements for stationary sources
- Controls at existing stationary sources
- Transportation control measures designed to reduce vehicle miles traveled
- Other emission control measures appropriate for the area based on the following considerations: cost-effectiveness, PM10 emission reduction potential, economic and social concerns, and/or other factors that the State deems appropriate.

H. SUBSEQUENT MAINTENANCE PLAN REVISIONS

This revised maintenance plan provides for continued maintenance of the PM10 NAAQS for an additional ten years beyond the original ten-year period. Consequently, no further maintenance plan updates are required or anticipated.

APPENDIX A: Revised Natural Events Action Plan

For High Wind Events in Lamar, Colorado

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2012 REVISED
NATURAL EVENTS ACTION PLAN
FOR
HIGH WIND EVENTS
LAMAR, COLORADO

Prepared by:

Colorado Department of Public Health and Environment

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and

CITY OF LAMAR

PROWERS COUNTY COMMISSIONERS

I. EXECUTIVE SUMMARY

This document updates the previous Natural Events Action Plan[7] that was approved by EPA as part of the Lamar redesignation request and associated PM10 maintenance plan (see 70 FR 61563).

Over the past eleven years (2001-2011), the monitors located at the Power Plant and Municipal Complex in Lamar, Colorado experienced occasional exceedances of the 24-hour National Ambient Air Quality Standard (NAAQS) for PM10 (particulate matter having a nominal aerodynamic diameter equal to or less than 10 microns). Each of these exceedances was associated with unusually high winds and blowing dust in the Lamar area.

Recognizing that certain uncontrollable natural events, such as high winds, wildfires, and volcanic/seismic activity can have on the NAAQS, the Environmental Protection Agency (EPA) issued a Natural Events Policy (NEP) in 1996. The NEP specifies the procedures for mitigating PM10 impacts which includes the development of a Natural Events Action Plan (NEAP) for protecting public health in areas where the PM10 standard may be violated due to these uncontrollable natural events. The guiding principles of the policy are:

- Federal, State, and local air quality agencies must protect public health;
- The public must be informed whenever air quality is unhealthy;
- All valid ambient air quality data should be submitted to the EPA Aerometric Information Retrieval System (AIRS) and made available for public access;
- Reasonable measures safeguarding public health must be taken regardless of the source of PM10 emissions; and.
- Emission controls should be applied to sources that contribute to exceedances of the PM10 NAAQS when those controls will result in fewer violations of the standards.

The original 1998 Lamar NEAP was developed in response to three exceedances of the PM10 NAAQS (two in 1995 and one in 1996), the Colorado Department of Public Health and Environment's Air Pollution Control Division (Division), in conjunction with the City of Lamar's Public Works Department, Parks and Recreation, and Prowers County Commissioners, the Natural Resources Conservation Services, the Burlington Northern Santa Fe Railroad, and other agencies. That Plan was presented to EPA in 1998 and subsequently approved.

Since the last update to the Lamar NEAP in 2003, the EPA promulgated in 2007 an Exceptional Event Rule (EER) which establishes a process for the treatment of data influenced by exceptional events. The EER is based on amendments to Section 319 of the Clean Air Act which defines an exceptional event as an event that: (i) affects air quality; (ii) is not reasonably controllable; (iii) is caused by human activity not likely to

[7] See "*Revised (2003) Natural Events Action Plan for High Wind Events Lamar, Colorado"*

recur at a particular location, or is a natural event; (iv) and is determined by EPA through the process established in regulation to be an exceptional event. The EER provisions require that states address the following six elements in a request for data exclusion:

- The event affects air quality
- The event was not reasonably controllable or preventable
- The event was caused by human activity that is unlikely to recur at a particular location, or was a natural event
- There exists a clear causal relationship between the specific event and the monitored concentration;
- The event is associated with a measured concentration in excess of the normal historical fluctuations including background
- There would have been no exceedance or violation but for the event

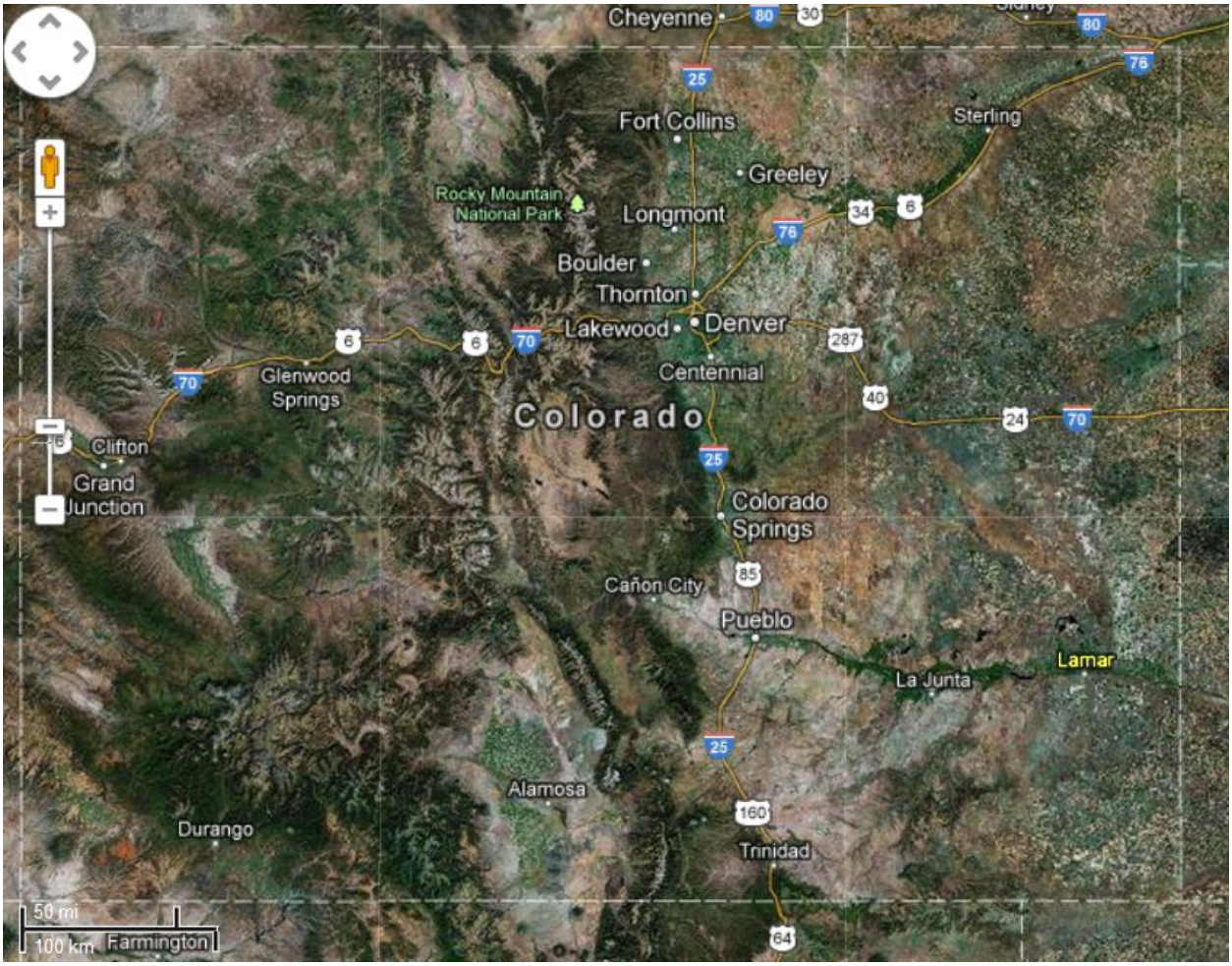
Unlike the original EPA Natural Events Policy, the 2007 Exceptional Events Rule does not require the development of a Natural Events Action Plan (see 72 FR 13576). Nevertheless, since the Lamar NEAP is an element of the EPA approved Lamar PM10 Maintenance Plan; the NEAP must remain in place and be updated no less than every five years – as specified in the original plan.

Furthermore, the Lamar NEAP has assisted the area in addressing blowing dust due to uncontrollable winds and is designed to protect public health, educate the public about high wind events and blowing dust; mitigate health impacts on the community during future events; and, identify and implement Best Available Control Measures (BACM) for anthropogenic sources of windblown dust.

II. INTRODUCTION

The City of Lamar is located in Prowers County in southeastern Colorado (see Figure 1). Situated along the Arkansas River and near the Kansas border, Lamar serves as the largest city and the agricultural center for southeast Colorado. The area surrounding Lamar consists of gently rolling to nearly level uplands where the dominant slopes are less than 3 percent. The climate is generally mild and semiarid. Annual precipitation is about 15 inches. Summers are long and have hot days and cool nights. In winter and spring, windstorms are common, especially in drier years including year 2002, one of the driest periods in over 350 years. These high velocity dust storms and drought conditions are associated with most elevated PM10 issues that the Lamar area experiences.

Figure 1: State of Colorado Map



In recognition of the need to protect public health in areas where PM10 exceeds the NAAQS due to natural events such as the unusually high winds, this Natural Events Action Plan was revised based on the 1998 and 2003 NEAPs, which were developed for the Lamar area based on the original NEP guidance. This plan outlines specific procedures to be taken in response to wind-blown events. In short, the purpose of the plan is to:

- Educate the public about the problem;
- Mitigate health impacts on exposed populations during future events; and
- Identify and implement Best Available Control Measures (BACM) for anthropogenic sources of windblown dust.

A. Background

High winds are common to the southeast region of Colorado. Under some conditions, these winds are strong enough to lift particulate matter into the air and cause elevated levels of PM10 above the Federal and State standards. Due to observed problems in Lamar with dirt, dust, and particulate, area monitoring of total suspended particle pollution was instituted at the Power Plant site in 1975. In June 1985, monitoring for PM10 began. A new site, the Municipal Complex, was selected in August, 1986. This site was considered to better meet the maximum siting criteria and more adequately reflect worse case population exposure. The Power Plant site was re-established in February 1992 and has since operated along with the Municipal Complex site on an everyday sampling schedule.

Lamar's monitoring history shows that the annual PM10 standard of 50 $\mu g/m^3$ averaged over an annual period has never been exceeded. The Lamar area has however experienced exceedances of the 24-hour PM10 standard of 150 $\mu g/m^3$ since 1985. The associated weather conditions on each of the exceedance days conform to a repeated pattern of regional high winds and blowing dust. In each case an intense, fast-moving, surface low-pressure system tracked through eastern Colorado. Typically these systems had surface lows that were not collocated with a closed upper low or nearly closed upper level trough. This distinction is important because the collocated or vertically "coupled" systems usually bring significant up slope snow or rain to the region. The intensity of the lows associated with the PM10 exceedances is evident in the average central pressure of 990 mb (corrected to sea level). This value is typical of a deep, well-organized system. Such well-organized systems usually generate high winds in the vicinity of the low center.

The past exceedances of the PM10 NAAQS classified Lamar as a moderate nonattainment area for PM10. In response to this designation, Lamar with the assistance of the State prepared the Lamar PM10 Non-Attainment Plan and the Redesignation Request and Maintenance Plan. The Lamar PM10 Maintenance Plan was submitted to EPA in 2002 and was approved on October 25, 2005. According to EPA's 1996 Natural Events Policy, states may request that a moderate nonattainment area not be reclassified as serious if it can be demonstrated that the area would attain

the standards by the statutory attainment date but for emissions caused by natural events.

In 2007, EPA promulgated the Exceptional Events Rule (EER) that supersedes the NEP, thus this plan update reflects the requirements of the EER but also retains the previous commitments approved under the Lamar PM10 Redesignation Request and associated Maintenance Plan.

B. The Natural Events Policy

(1) Background

On May 30, 1996, EPA issued the Natural Events Policy in a memorandum from Mary D. Nichols, Assistant Administrator for Air and Radiation. In this memorandum EPA announced its new policy for protecting public health when the PM10 NAAQS are violated due to natural events. Under this policy three categories of natural events are identified as affecting the PM10 NAAQS: (1) volcanic and seismic activity; (2) wildland fires; and, (3) high wind events. Only high wind events will be addressed in this NEAP. Based on EPA's natural events policy high winds are defined as uncontrollable natural events under the following conditions: (1) the dust originated from nonanthropogenic sources; or, (2) the dust originated from anthropogenic sources controlled with best available control measures (BACM). Furthermore, the conditions that create high wind events vary from area to area with soil type, precipitation, and the speed of wind gusts.

Prior to EPA guidance on PM10 exceedances due to natural events, the Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events and Appendix K to 40 CFR, Part 50, were issued by EPA to address situations where natural sources strongly influence an area's air quality. Similar to EPA's natural events policy, Appendix K provides, in part, that measured exceedances of the PM10 NAAQS may be discounted from decisions regarding nonattainment area status if the data are shown to be influenced by uncontrollable events caused by natural sources of particulate matter. Then in 1990, the Clean Air Act Amendments added section 188(f) that provides EPA with discretionary statutory authority to waive either a specific attainment date or certain planning requirements for serious PM10 nonattainment areas that are significantly impacted by nonanthropogenic sources.

According to EPA's Natural Events Policy the section 188(f) waiver provision, Appendix K, and the Exceptional Events Guidance are to be considered revised by the requirements of the May 30, 1996 NEP. Additional justification of the revisions can be found in the Appendix of EPA's natural events policy.

(2) NEP Content Elements

Consistent with the original NEP, EPA will potentially consider exceedances of the NAAQS as a "natural event" if a Natural Events Action Plan is developed and implemented to address future events. The following is a summary of the specific EPA guidance regarding development of a NEAP:

> *Element 1: Analysis and documentation of the event should show a clear causal relationship between the measured exceedance and the natural event. The type*

and amount of documentation provided should be sufficient to demonstrate that the natural event occurred, and that it impacted a particular monitoring site in such a way as to cause the PM10 concentrations measured.

Element 2: Establish education programs. Such programs may be designed to educate the public about the short-term and long-term harmful effects that high concentrations of PM10 could have on their health and inform them that: (a) certain types of natural events affect the air quality of the area periodically, (b) a natural event is imminent, and (c) specific actions are being taken to minimize the health impacts of events.

Element 3: Minimize public exposure to high concentrations of PM10 through a public notification and health advisory program. Programs to minimize public exposure should (a) identify the people most at risk, (b) notify the at-risk population that a natural event is imminent or currently taking place (c) suggest actions to be taken by the public to minimize their exposure to high concentrations of PM10, and (d) suggest precautions to take if exposure cannot be avoided.

Element 4: Abate or minimize appropriate contributing controllable sources of PM10. Programs to minimize PM10 emissions for high winds may include: the application of BACM to any sources of soil that have been disturbed by anthropogenic activities. The BACM application criteria require analysis of the technological and economic feasibility of individual control measures on a case-by-case basis. The NEAP should include analyses of BACM for contributing sources. If BACM are not defined for the anthropogenic sources in question, step 5 listed below is required.

Element 5: Identify, study, and implement practical mitigating measures as necessary. The NEAP may include commitments to conduct pilot tests of new emission reduction techniques. For example, it may be desirable to test the feasibility and effectiveness of new strategies for minimizing sources of windblown dust through pilot programs. The plan must include a timely schedule for conducting such studies and implementing measures that are technologically and economically feasible.

Element 6: Periodically reevaluate: (a) the conditions causing violations of a PM10 NAAQS in the area, (b) the status of implementation of the NEAP, and (c) the adequacy of the actions being implemented. The State should reevaluate the NEAP for an area every 5 years at a minimum and make appropriate changes to the plan.

Element 7: The NEAP should be developed by the State in conjunction with the stakeholders affected by the plan.

Element 8: The NEAP should be made available for public review and comment and may, but is not required, to be adopted as a revision to the State Implementation Plan (SIP) if current SIP rules are not revised.

Element 9: The NEAP should be submitted to the EPA for review and comment.

The following describes the Lamar NEAP and its conformance with the original EPA guidance on natural events, which was used to develop the original Lamar NEAP:

III. NATURAL EVENTS ACTION PLAN

Element 1: Documentation & Analysis

According to the Natural Events Policy, "the conditions that create high wind events vary from area to area with soil type, precipitation and the speed of wind gusts." Thus, states are to determine the conditions that define high winds in an area. Making a precise determination, however, is a complex task that requires detailed information on soil moisture, daily wind speeds, temperature, and a number of other variables that are not readily available at this time. Historically, the Division has used, in the absence of Lamar specific studies, the definition of high winds specified in the *Guideline on the Identification and Use of Air Quality Data Affected by Exceptional Events.* Based on this guidance, high winds are defined as: "An hourly wind speed of greater than or equal to 30 mph or gusts equal to or greater than 40 mph, with no precipitation or only a trace of precipitation." However, EPA recently proposed *Draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule* (June 2012) that suggests that EPA will accept a threshold of sustained wind of 25 mph for areas in the west provided the agencies support this as the level at which they expect stable surfaces (i.e., controlled anthropogenic and undisturbed natural surfaces) to be overwhelmed.[8] Nevertheless, since this new EPA guidance is not finalized, the Division may need to rely on earlier EPA guidelines.

Since the last update to the Lamar NEAP in 2003, the EPA promulgated in 2007 an Exceptional Event Rule (EER) which establishes a process for the treatment of data influenced by exceptional events. The EER is based on amendments to Section 319 of the Clean Air Act which defines an exceptional event as an event that: (i) affects air quality; (ii) not reasonably controllable; (iii) is caused by human activity not likely to recur at a particular location, is a natural event; (iv) and is determined by EPA through the process established in regulation to be an exceptional event. The EER provisions require that states address the following six elements in a request for data exclusion:

- The event affects air quality
- The event was not reasonably controllable or preventable
- The event was caused by human activity that is unlikely to recur at a particular location, or was a natural event
- There exists a clear causal relationship between the specific event and the monitored concentration;

[8] See page 16, Section 3.1.4 – Consideration of Wind Speed, EPA Draft for Public Comment of *Draft Guidance on the Preparation of Demonstrations in Support of Requests to Exclude Ambient Air Quality Data Affected by High Winds under the Exceptional Events Rule* (6/2012)

- The event is associated with a measured concentration in excess of the normal historical fluctuations including background
- There would have been no exceedance or violation but for the event

Unlike the original EPA Natural Events Policy, the 2007 Exceptional Events Rule does not require the development of a Natural Events Action Plan (see 72 FR 13576). Nevertheless, since the Lamar NEAP is an element of the EPA approved Lamar PM10 Maintenance Plan; the NEAP must remain in place and be updated no less than every five years – as specified in the original plan.

Moreover, the Lamar NEAP has assisted the area in addressing blowing dust due to uncontrollable winds and is designed to protect public health, educate the public about high wind events and blowing dust; mitigate health impacts on the community during future events; and, identify and implement Best Available Control Measures (BACM) for anthropogenic sources of windblown dust.

The below table lists eighteen (18) PM10 events identified as exceedances of the primary 24-hour PM10 NAAQS that were recorded at the Lamar Power Plant and Municipal Complex for the eleven year period (2001 – 2011). The PM10 exceedances were recorded on days with unusually high wind speeds and are flagged as high wind events, except for four events; one in 2001 and two in 2009 that were inadvertently not flagged before the regulatory deadline but are associated with high winds and another in 2009 was flagged as a high wind event but no demonstration was submitted before the regulatory deadline.

Table 1: Lamar Area PM10 Exceedances (2001-2011)

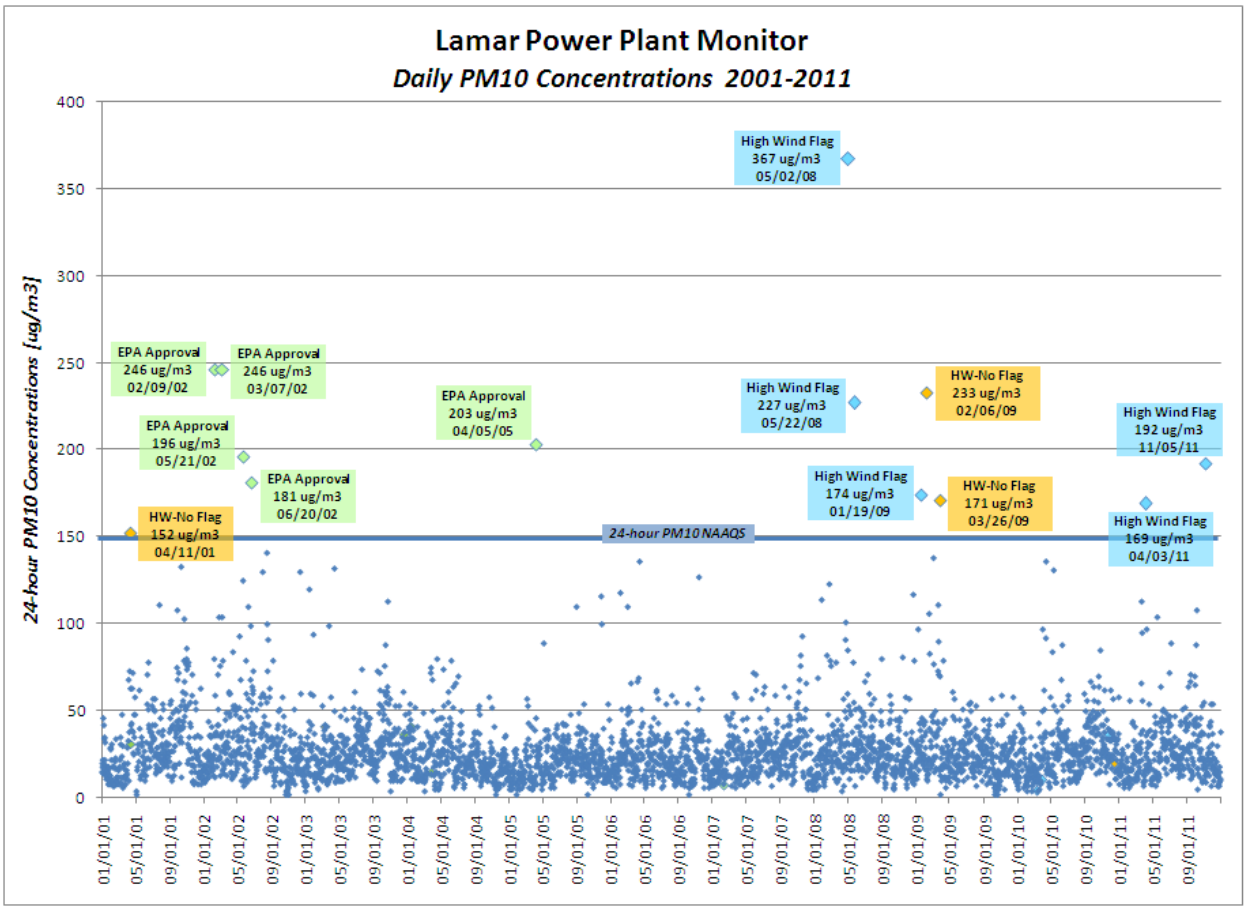
Event Date	Monitor Site	PM10 Value [µg/m3]	Data Flag	EPA Review/Filing Status
04/11/01	Power Plant	152	none	Event not flagged
02/09/02	Power Plant	246	High Wind	EPA Concurrence on Flag
03/07/02	Power Plant	246	High Wind	EPA Concurrence on Flag
05/21/02	Power Plant	196	High Wind	EPA Concurrence on Flag
05/21/02	Municipal	183	High Wind	EPA Concurrence on Flag
06/20/02	Power Plant	181	High Wind	EPA Concurrence on Flag
06/20/02	Municipal	162	High Wind	EPA Concurrence on Flag
04/05/05	Power Plant	203	High Wind	EPA Concurrence on Flag
04/05/05	Municipal	164	High Wind	EPA Concurrence on Flag
05/02/08	Power Plant	367	High Wind	*Under EPA Consideration*
05/22/08	Power Plant	227	High Wind	*Under EPA Consideration*
01/19/09	Power Plant	174	High Wind	*Under EPA Consideration*
01/19/09	Municipal	173	High Wind	*Under EPA Consideration*
02/06/09	Power Plant	233	none	Event not flagged
03/05/09	Municipal	176	High Wind	Flagged – Not submitted
03/26/09	Power Plant	171	none	Event not flagged
04/03/11	Power Plant	169	High Wind	Prelim Analysis
11/05/11	Power Plant	192	High Wind	Prelim Analysis

The Division, after an extensive meteorological analysis of each event, has confirmed that all of the above listed PM10 events are due to blowing dust associated with high winds, which caused exceedances of the 24-hr PM10 NAAQS that otherwise would not have occurred "but for" the event.

Consistent with the original EPA Natural Events Policy and as required by 2007 Exceptional Events Rule, each exceedance that is associated with high winds is flagged by the Division's Technical Services Program in the AIRS system. All supporting analysis and documentation of each high wind event is submitted to EPA Region VIII after public review and/or comment. According to EPA guidance, the type and amount of documentation provided for each event should be sufficient to demonstrate that the natural event occurred, and that it impacted a particular monitoring site in such a way as to cause the PM10 concentrations measured.

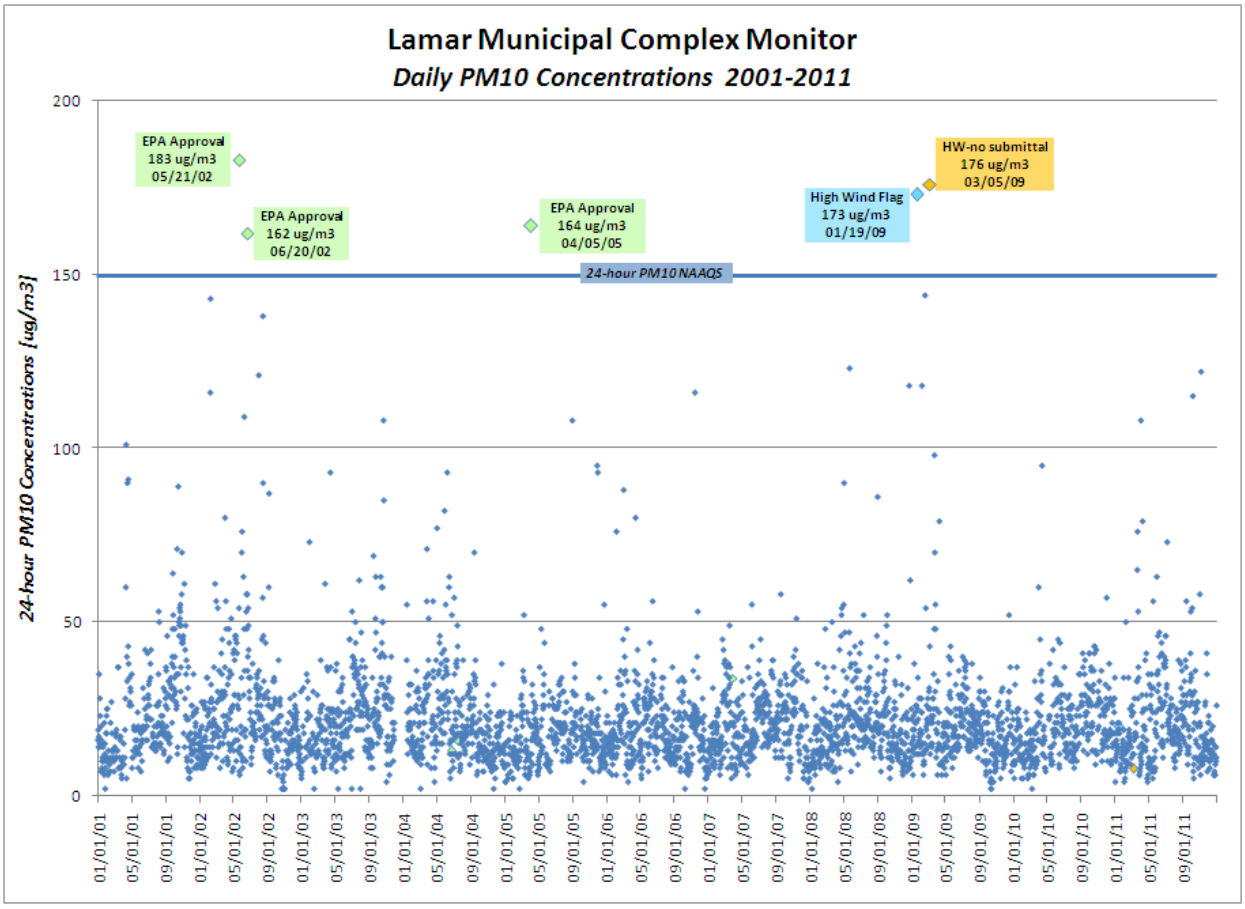
In the below Figure 2, the daily PM10 concentrations for the past eleven (11) years are compiled for the Power Plant monitor. The values above the 24-hour PM10 NAAQS are tagged with notes indicating the regulatory status of the exceptional events, which are all associated with high winds.

Figure 2: Power Plant PM10 Concentrations Over 11 Years



In the below Figure 3, the daily PM10 concentrations for the past eleven (11) years are compiled for the Municipal Complex monitor. The values above the 24-hour PM10 NAAQS are tagged with notes indicating the regulatory status of the exceptional events, which are all associated with high winds.

Figure 3: Municipal Complex PM10 Concentrations Over 11 Years



The foregoing data analysis, in conjunction with previously provided technical documentation, fulfills the documentation and analysis requirements of Element #1 of the Natural Events Policy as described on page 5 of the NEAP.

Element 2: Public Education Programs

The purpose of this program is to inform and educate the public about the problem. The Division has worked closely with the City of Lamar, Prowers County Commissioners, local media, and interested community groups to educate the public about the problems associated with elevated levels of PM10 in the Lamar area. Over the years numerous meetings have taken place with the City and County governments to discuss these issues and to develop a plan to address future high wind events in Lamar. Elements of the program include: informing the public when air quality in the area is unhealthy; explaining what the public can expect when high wind events occur;

what steps will be taken to control dust emissions during future high wind events; and, how to minimize their exposure to high concentrations of PM10 during high wind conditions. The public notification and education programs have included but are not limited to:

- An informational and health-related brochure has been and will continue to be distributed by the local governments, the Prowers County Health Nurses, the Prowers County conservation and agricultural extension agencies to sensitive populations (elderly and local school districts) as well as the general public. Distribution of the Blowing Dust Health Advisory Brochure began in January 1998 (see Appendix C). In the revised (2003) NEAP the Division also committed to develop a Spanish language brochure for the non-English speaking community.
- Back in 2002, an Air Quality Task Force was established in the community, which included local health department personnel, staff from city and county, the business community, a public health nurse representative, and the Division itself. The charge before the task force is to identify any unresolved air quality issues, ensure area exceedances are minimized, and work to ensure the community is aware of ongoing air quality issues and efforts to minimize impacts. The 2002 Task Force activities were not part of the original 1998 NEAP but demonstrate the additional efforts by the local agencies and the Division to improve area air quality.
- During the period 2005 to 2011, the Division coordinated the issuance of blowing dust advisories with Prowers County Department of Public Health and Environment. The Division would contact Prowers County staff when a blowing dust advisory was first issued, which is based on meteorological forecasts prepared by the Technical Services Program. Upon notification, Prowers County would issue a local public health advisory.
- Since late 2011, the Division has assumed the lead role for issuing blowing dust advisories statewide throughout the year. Based on meteorologist forecasts, the Division issues blowing dust advisories that are posted to the Colorado Air Quality Summary webpage and sent to members of the public on a list serve.
- Since 2002, over twelve (12) blowing dust advisories have been issued to ensure minimization of the public's exposure elevated concentrations of PM10.

This section fulfills the Element 2 requirement of the Natural Events Policy as described on page 6 of the NEAP.

Element 3: Minimize Public Exposure to High PM10

The Blowing Dust Health Advisory Program notifies the public to the possibility that a high wind event is imminent or currently taking place, and includes an advisory suggesting what actions can be taken to minimize exposure to high concentrations of particulate matter.

Originally, blowing dust advisories were issued by the Lamar area Environmental Health Southeastern offices with forecasting assistance provided by the Division and the National Weather Service. This forecasting methodology was approved as part of the 1998 NEAP submittal.

Since late 2011, the Division Technical Services Program has assumed the responsibility for issuing blowing dust advisories throughout the year for all areas of the state. For the Lamar region, a meteorologist evaluates the potential for blowing dust and prepares a daily forecast. These forecasts are based on a full meteorological forecast for the current and subsequent days, an assessment of statewide and regional soil moisture conditions, an evaluation of a variety of satellite data products, evaluation of surface weather observations, review of output from two models that forecast blowing dust in the United States, and an assessment of any blowing dust or wind advisory forecasts issued by National Weather Service Forecast offices in Colorado, Utah, New Mexico, and Arizona.

The meteorological forecast includes a review of wind (the potential for sustained winds of 30 mph or higher or gusts of 40 mph or higher), stability, and precipitation forecast products from the National Centers for Environmental Prediction (NCEP) NAM12 meteorological model and the National Weather Service Graphical Forecast products:

http://mag.ncep.noaa.gov/NCOMAGWEB/appcontroller?prevpage=index&MainPage=index&cat=MODEL+GUIDANCE&page=MODEL+GUIDANCE

http://graphical.weather.gov/sectors/centrockies.php#tabs

Soil moisture conditions are determined by checking the NCEP soil moisture product pages or the recent 30-day total precipitation maps from the High Plains Regional Climate Center:

http://www.cpc.ncep.noaa.gov/products/Soilmst_Monitoring/US/Soilmst/Soilmst.shtml

http://www.hprcc.unl.edu/maps/current/index.php?action=update_daterange&daterange=30d

In general widespread, anomalously dry conditions and/or 30-day precipitation totals of 0.5 inches or less are a good indicator for the potential for blowing dust.

Visible satellite imagery and satellite aerosol optical depth (AOD) products are evaluated for evidence of blowing dust upwind of the forecast area or developing in the area itself. A variety of such products are used, but they include NASA MODIS Tera and Aqua images and GOES Aerosol and Smoke Product (GASP) AOD imagery:

http://ge.ssec.wisc.edu/modis-today/

http://www.ssd.noaa.gov/PS/FIRE/GASP/gasp.html

Surface weather observations are checked for reports of winds of 30 mph or higher, gusts of 40 mph or higher, and visibility restrictions, blowing dust or haze.

Blowing dust products from the Navy Aerosol Analysis and Prediction Model or NAAPS are examined to look for the potential for local or transported dust during the next one to three days. The National Weather Service Air Quality Forecast Guidance System includes output from a blowing dust forecast model. Forecasters use the following

output maps from this model to assess blowing dust potential for the next one to three days:

http://www.nrlmry.navy.mil/aerosol/

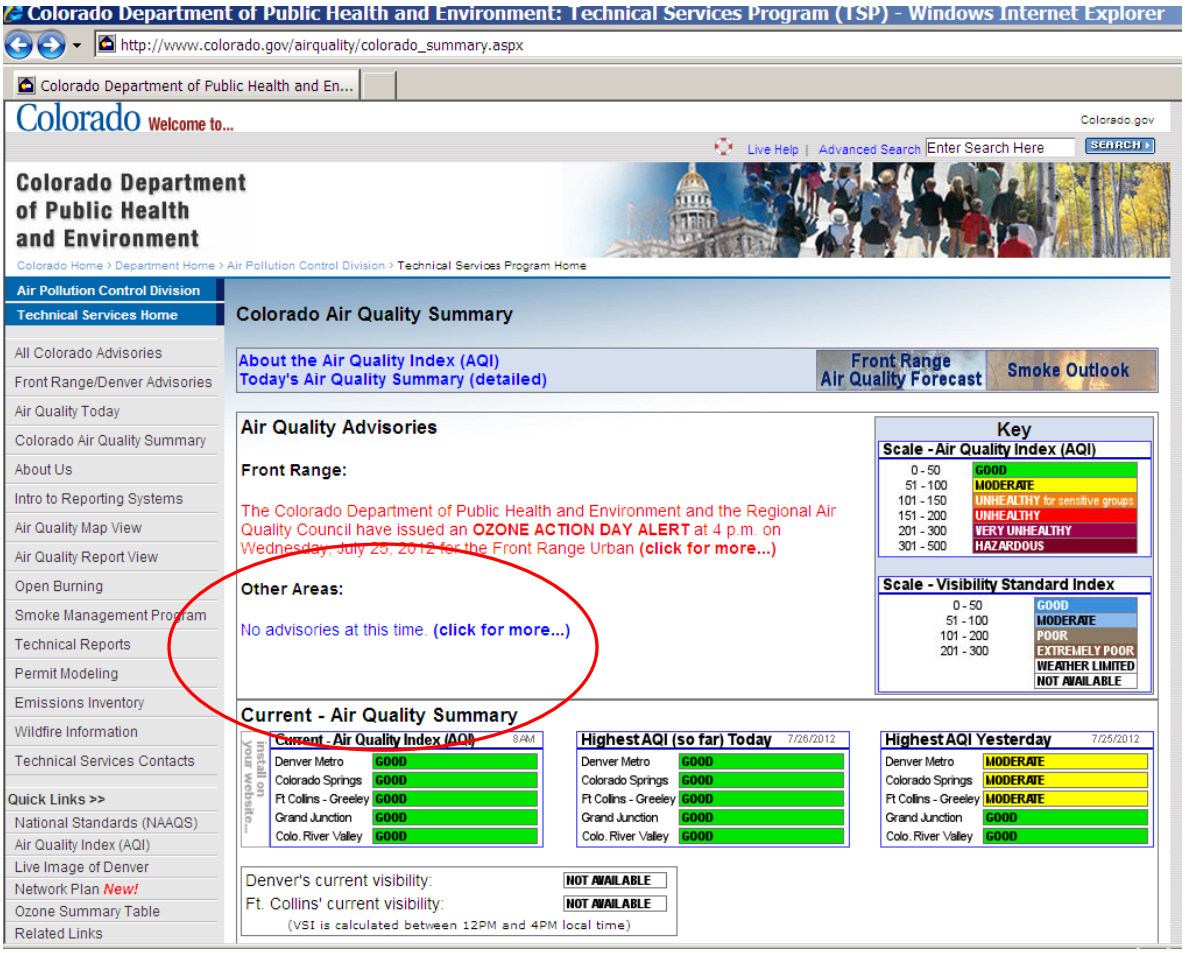
http://airquality.weather.gov/

Finally, the forecaster reviews zone forecast products and forecast discussions from the relevant National Weather Service Forecast offices to see if they are calling for high winds and/or blowing dust. The Division forecaster weighs the information from each of these sources in the context of his or her experience and determines a final forecast. If the foregoing analysis indicates blowing dust, the forecaster will issue a blowing dust advisory that is posted to the "Colorado Air Quality Summary" webpage at the following link:

http://www.colorado.gov/airquality/colorado_summary.aspx

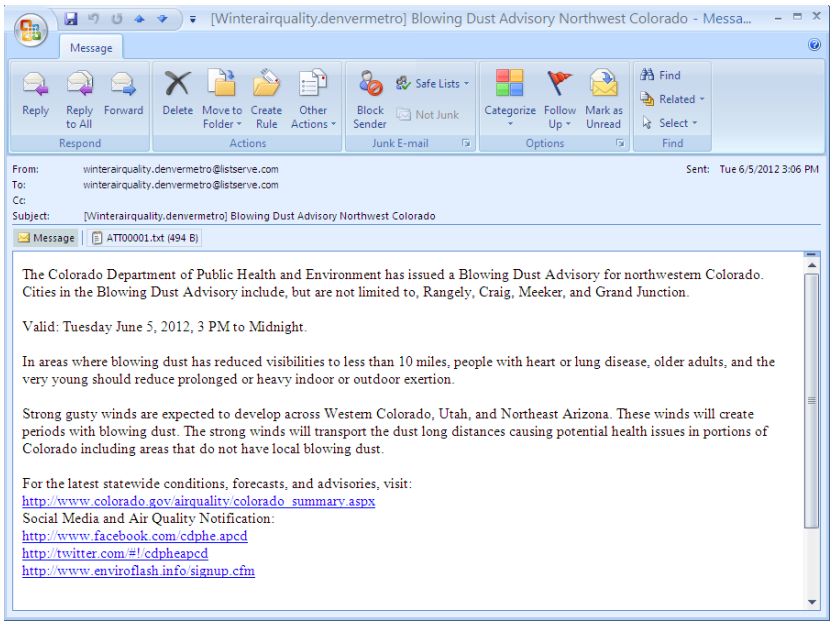
The below Figure 4 provides a screen view of the Colorado Air Quality Summary webpage. If a blowing dust advisory is issued for the Lamar area, the "Air Quality Advisories" portion of the webpage would display an advisory under the "Other Areas" section (circle in red).

Figure 4: Colorado Air Quality Summary Webpage



The blowing dust advisory is also sent to a winter air quality list serve, which emails the advisory to all registered recipients. Figure 5 provides an example blowing dust advisory that specifies the duration of the advisory along with exposure recommendations for sensitive populations.

Figure 5: Example Blowing Dust Air Quality List Serve Email



The Division is committed to continually investigating blowing dust issues and improving the blowing dust advisory process to ensure timely notification in order to minimize public exposure. The website air quality summary and list serve notification are new activities that were not part of the original 1998 NEAP or the revised 2003 NEAP and demonstrate additional efforts by the Division.

This section fulfills the Element 3 requirement of the Natural Events Policy as described on page 6 of the NEAP.

<u>Element 4: Abate or Minimize Contributing Sources (BACM) and Element 5: Identify, Study and Implement Practical Control Measures</u>

1. Best Available Control Measures (BACM) Determination

According to the NEP, BACM must be implemented for anthropogenic sources contributing to NAAQS exceedances in moderate PM10 nonattainment areas. BACM for PM10 is defined (see 59 FR 42010 - August 16, 1994) as techniques that achieve the maximum degree of emissions reduction from a source as determined on a case-by-case basis considering technological and economic feasibility. Through a series of meetings beginning in 1997 between the Division and Lamar officials representing the City of Lamar, Prowers County Commissioners, local farmers, a county health specialist, the local media, the Natural Resources Conservation Service, the county extension office, and concerned citizens, issues were discussed surrounding the NEAP and its efforts. Specifically covered were issues of the meteorological data, monitoring

data, potential contributing sources to the high wind events, and potential candidate BACM. The community meetings, coupled with the analyses of the supporting documentation, identified two distinct set of circumstances that lead to Lamar's high wind exceedances of the PM10 NAAQS:

- High concentrations of PM10 caused by a mixture of anthropogenic and non-anthropogenic sources coming largely from outside the nonattainment area under high wind conditions - from about the 270 degree to 360 degree wind directions (west, northwest, and north directions); and,
- Prolonged climatic conditions of low precipitation over an extended period of time that act to dry area soils making them more susceptible to airborne activity under high wind conditions.

The meetings also identified potential BACM candidates including the Burlington Northern Santa Fe rail line, agricultural lands, other open areas, limited construction activity (which has been since completed), the city landfill, and area gravel pit. Specific documentation for these candidate BACM can be found in the original 1998 NEAP.

BACM Options Considered:

To determine the most appropriate and viable control measures for the community, both a review of the area emission inventory and consideration of all BACM was undertaken. Note that numerous other BACM options have been considered for the revised (2003) NEAP that were not part of the original (1998) NEAP.

Based on the contributing source analysis and in review with community stakeholders, the following BACM options were considered as possible PM10 control measures for the community:

(a) Street Sweeping Activities - Community Street sweeping programs have demonstrated effectiveness in other communities. Such activities were considered as a local control measure. Expanding the current street sweeping program and purchasing additional, more effective equipment were also reviewed.

(b) Construction/Demolition Activity – local ordinances to control emissions from construction and demolition sites have been implemented in other parts of the state with good success. Also, several work practice could be applied to reduce emissions from the site including watering, a track out policy, and an area land use plan. Based on the contributing source analysis, this option was discussed with the City of Lamar and Prowers County officials as part of the 1998 NEAP as well.

(c) Wind Erosion of Open Areas – several practices were reviewed regarding the wind erosion of open areas, including both local and regional efforts. Recommendations under consideration included sodding of local parks, tree breaks planted at the area transfer station, gravel/chips along railroad corridor, and chemical stabilization applied by the city along the railroad corridor in a two-block area. Based on the contributing source analysis, this option was discussed with the City of Lamar and Prowers County officials as part of the 1998 NEAP as well.

(d) Control of Stationary Source Emissions - as identified elsewhere in this NEAP, a review of stationary sources and their relative contribution to overall PM concentrations was completed. It was determined that few PM10 sources exist in the area, appearing to contribute a very small amount of particulate matter to the overall inventory.

(e) Road Stabilization - In a effort to better understand the effects of road stabilization, several options were reviewed including the use of chemical stabilizers and water as a stabilizing measure. Also, periodic assessments to determine if traffic levels on unpaved roads surpass Colorado Regulation No. 1 limits were considered. If daily traffic counts exceed 200 trips per day on unpaved roads, state regulations apply that reduce PM10 emissions from those roads. Specifically, a periodic assessment of traffic levels on unpaved roads within the city limits and within one mile of the city limits were considered. State regulation calls for a road traffic count and dust control plan for roads that exceed the 200 trips threshold. In addition, Lamar currently suggests that drivers maintain their vehicles at a slow speed on unpaved roads and other dirt surfaces to reduce dust emissions. This information is disseminated throughout the community.

(f) Woodburning Curtailment Programs - the possibility of instituting a citywide curtailment program was reviewed and considered. This has been a consideration for the community and includes discouraging wood burning on high wind days.

(g) Open Burning - The usefulness of imposing and maintaining an open burning curtailment program during high wind events was reviewed. Current state air pollution control laws and regulations provide some guidance on the effort.

(h) Avoidance of Dust Producing Equipment - The effectiveness of avoiding the use of dust producing equipment has also been considered. Currently Lamar discourages the use of dust-producing equipment (e.g., leaf blowers) in an effort to reduce PM10 emissions and does so through public education and outreach efforts.

(i) Reducing or Postponing Tilling and Plowing or Other Agricultural Practices that Contribute to PM10 Emissions - It is well recognized that dust-producing activities such as tilling, plowing, and other agricultural practices increase the amount of PM10 released. As such, these control measures were discussed as part of the effort to reduce PM10 impacts on Lamar. Review of existing and potentially future control practices were considered at the local, regional, state, and federal (e.g., Natural Resources Conservation Service) level.

(j) Wind Break - Various trees are found throughout Lamar. However, the placement of one row of barrier trees (e.g., Russian Olives) would block potential contributing sources. The Russian Olive is a quick growing large shrub/small tree that will do well given the windy climate of Lamar. According to section 3.5.2.1 of EPA guidance entitled *Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures*, dated September 1992, one-row of trees is considered an effective windbreak.

(k) Vegetative Cover/Sod - Efforts elsewhere in the State have demonstrated the usefulness of using a vegetative cover at sites where dust is known to blow. Efforts to use this control measure were reviewed for applicability and effectiveness.

(l) Railroad Corridor - Two categories of surface treatments were considered to control fugitive dust emissions lifted from the 400'-wide railroad corridor under dry, high wind conditions. This option was fully explored in the 1998 NEAP and details of this option can be found there.

Lamar Stationary Sources Emission Inventory

To ensure that significant changes in PM10 emissions from local stationary sources are not a significant contributing factor to area exceedances, an emission inventory was prepared and reviewed. In the Lamar PM10 Maintenance Area, the following Table 2 indicates that stationary sources comprise about 13.7 percent of the total emission inventory of 1,359 pounds per day:

Table 2: Lamar Area PM10 Emission Inventory – 2010 Actual Emissions

Source	**2010 PM10 Emissions**	
	[tpy]	*[lbs/day]*
*Lamar Feed & Grain - White Stone Farms**	*23.50*	*128.8*
Lamar Utility Board	**15.88**	**87.0**
*Front Range Aggregate – West Pit**	*12.76*	*70.0*
Colorado Mills, LLC	**12.30**	**67.4**
Carder – Hard Scrabble Pit	*1.08*	*5.9*
*All Rite Paving & Redi-Mix Inc.**	*5.29*	*29.0*
Dragon ESP	**5.06**	**27.7**
*JB Five Rivers Cattle Feeding Co.**	*0.83*	*4.6*
Carder	**0.75**	**4.1**
*Prowers County – Walker Pit North**	*0.65*	*3.6*
*Prowers County – Walker Pit South**	*0.65*	*3.6*
*All Rite Paving & Redi-Mix Inc.**	*0.27*	*1.5*
*Carder Inc. – J&S Pit**	*0.04*	*0.2*
Southeastern Colorado Coop	**0**	**0**
(Greater Lamar Area) Totals**:**	85.2	467.1
(Lamar Maintenance Area Only) Totals:	**34.0**	**186.3**

Bold denotes sources in Lamar PM10 Maintenance Area
** Denotes sources located outside of Lamar PM10 Maintenance Area*

In the below Figure 4, a number of the stationary sources are indentified in the Lamar area along with the location of the Power Plant PM10 monitor. The other local stationary sources listed in the above table are located outside the portion of the map shown. The PM10 maintenance area is denoted by the bright green line.

Figure 4: Map of Lamar Point Sources nearby the Power Plant Monitor

BACM Options Discounted

Several BACM options were discounted from consideration based on the meteorological analysis, onsite inspection and discussion with area residents and local government officials. A complete discussion of these previous efforts can be found in the 1998 NEAP.

For this revised Plan, the community remains committed to meeting BACM in all instances, where feasible. For example, the ongoing regional drought significantly impacts the amount of water available as a control measure (e.g., watering of area roads to reduce PM10). Accordingly water restrictions (and related economic impacts of the drought) will likely dictate the practicality of this control measure.

IV. STAKEHOLDER AGREEMENTS

The City of Lamar and Prowers County have identified contributing sources for developing BACM as required by NEP. The following descriptions include BACM that has either already been put into place or will be phased in as economically and technically feasible.

City of Lamar

The City of Lamar has been very active in addressing potential PM10 sources within the Lamar area through efforts such as sodding baseball fields, implementing and enhancing a street sweeping program, and chip-seal paving of many unpaved roads. In addition to these type of control measures already taken by the City, the Public Works Department implemented the following BACM within the area:

1. Wind Break

Beginning in the Spring of 1997, a wind break of trees was planted north of the Power Plant monitoring site. The Russian Olive tree wind break is located approximately one half mile north of the Power Plant monitoring site and will block potential contributing sources such as the Lamar Transfer Station and other unpaved equipment traffic areas to the north. The Russian Olive is a quick growing large shrub/small tree will do well given the semi-arid and windy climate of Lamar. According to section 3.5.2.1 of EPA guidance entitled "*Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures"*, dated September 1992, one-row of trees is considered an effective windbreak. In addition to this commitment, more recent efforts include: the installation of a drip irrigation system to irrigate these tree groves.

2. Landfill Shutdown

The East Lamar Landfill is located approximately six (6) miles east of the city limit. According to section 3.5.1 of the "Operations and Closure Plan for the East Lamar Landfill", the Director of the Public Works Department and/or the landfill operator is required to do the following litter control measures under high wind conditions:

- Soil cover is required to be placed on the working face of the landfill daily during periods of wind in excess of 30 mph; and,
- The landfill must be closed down when sustained winds reach 35 mph or greater.

An on-site wind gauge is used to monitor wind speeds at the landfill. Operators have radios in their equipment connecting them with the main office so that when the decision to close the landfill is made, it can take place immediately. According to the previous Director of Public Works, landfill operators have been directed to close the landfill at their discretion. Because paper begins to lift and blow into the debris fences at wind speeds of 25 to 30 mph, the operator usually closes the landfill prior to wind speeds reaching 30 mph. The City of Lamar has agreed to make the closure of the Lamar landfill mandatory when wind speeds reach 30 mph. This also reduces

windblown dust from the landfill as earth moving activities are reduced or eliminated during periods of shut down.
In addition to this commitment, more recent efforts include: the placement of chain link fencing and various debris fences in place of the previous litter entrapment cage. This effort is to better minimize the release of materials during high wind conditions.

3. Vegetative Cover/Sod

The Lamar Recreation Department installed 100,000 square feet of sod at a recreational open space called Escondido Park. Escondido Park is located in northwest Lamar at 11th and Logan Streets. A sprinkler system has also been installed by the Parks and Recreation Department. The sod provides a vegetative cover for the open area. This dense, complete cover provides an effective control against windblown soil from the open area of the park.

In addition to the commitment above, more recent efforts include: the commitment by the Lamar Public Works Department to stabilize the entrance road leading to and from Escondido Park to reduce track out onto city streets and minimize additional releases of PM10.

4. Additional Public Works Projects

In addition to the PM10 control efforts of the original NEAP, new Public Works projects to further reduce emissions of PM10 include:

- The recent purchase of a TYMCO regenerative air street sweeper which is much more effective in reducing dust during street sweeping activities. The use of this sweeper allows for improved cleaning of the streets (e.g., sweeps the gutter and street);
- The fencing of an area around the City Shop to reduce vehicle traffic that may be responsible for lifting dust off of the dirt area between the railroad tracks and the Shop;
- The stabilization of a large dirt and mud hole on the north side of the City Shop. This project is credited with keeping mud from being tracked out into the street and becoming airborne by vehicular traffic;
- The ongoing commitment to search for other stabilization projects that benefit the community and improve area air quality, and;
- The relocation of the Municipal Tree Dump (formerly located in the northeastern corner of the city) to approximately six miles east of the city (now housed at the Municipal Landfill). This relocation eliminates a major source of smoke from agricultural burns that may have previously affected the community.

Burlington-Northern/Santa Fe Rail Line

The rail line running east-west of the Power Plant monitoring site was deemed to be an important PM10 source during conditions of high winds and low precipitation. Vehicle traffic which damages vegetation and break up the hard soil surfaces, highwinds, and passing trains re-entrains the dust into the air. This area is particularly problematic in

the two block area immediately west of the Power Plant monitoring site. Control of this open area requires a close working agreement between the Burlington-Northern/Santa Fe Railroad Company (BNSF), the Division, and the City of Lamar Public Works Department. The purpose of this BACM is to reduce the amount of particulate matter susceptible to wind erosion under high wind conditions and general re-entrainment of dust in the ambient air as a result of local train traffic passing in close proximity of the PM10 monitor.

In September 1997, the City chemically stabilized exposed lands north of the rail line between Fourth and Second Street where there was evidence of vehicle traffic. All other lands on either side of the rail road tracks between Main Street (Fifth) and Second Street and extending westward have either natural, undisturbed ground cover or it is used for commercial/recreation purposes that do not allow for significant re-entrainment (BNSF is responsible for maintaining 50 feet of property on either side of the main track). Most of these lands are leased by the City. After September 1997 the City negotiated the lease of these lands. Once acquired, a long term plan, will be developed for these lands such as restricting vehicle access, permanently stabilizing lands with vegetation and gravel, increasing park and recreational use, and using the lands for city maintenance and storage activities.

According to John Meldrum, Manager of Environmental Operations for BNSF, the railroad company owns the main rail line and 200 feet on either side of the track. Much of this property has been sold or leased under private contracts. At this time BNSF is responsible only for the main rail line and for 50 feet of property on either side of the main track. All property sold or under contract is not the responsibility of BNSF. As a result, BNSF has stabilized the railroad corridor 50 feet on either side of the main rail line.

In May 1997, Burlington Northern Santa Fe placed chips (gravel) 50 feet on either side of the main track from Main Street to Second Street (three blocks) to control fugitive dust emissions from this section of the track. Graveling exposed surfaces not exposed to regular vehicle traffic is considered a permanent mitigation measure. Details of this arrangement can be found in the documentation under the 1998 submittal.

USDA: Natural Resources Conservation Service (NRCS)

1. Conservation Reserve Program (CRP)

Prowers County is a predominately agricultural area that is made up of over one million acres of land area - 882,165 acres (or 84.6%) of which is land in farms. Of the farm land acreage, cropland accounts for over half of the total (467,650 acres). Water, and often the lack of it, coupled with the frequent high winds experienced during late fall and early spring can destroy crops, encourage pests, and damage soil surfaces lending them susceptible to wind erosion. Most of Prowers County cropland acreage is farmed using dryland practices (versus irrigated) and consists of soils classified as highly-erodible-land (HEL) by the Department of Agriculture.

Recognizing the problems associated with erodible land and other environmental-sensitive cropland, the U.S. Department of Agriculture (USDA) included conservation

provisions in the Farm Bill. This legislation created the Conservation Reserve Program (CRP) to address these concerns through conservation practices aimed at reducing soil erosion and improving water quality and wildlife habitat.

The CRP encourages farmers to enter into contracts with USDA to place erodible cropland and other environmentally-sensitive land into long-term conservation practices for 10-15 years. In exchange, landowners receive annual rental payments for the land and cost-share assistance for establishing those practices.

The CRP has been highly successful in Prowers County by placing approximately 146,000 acres of Prowers County cropland, or 28% of total cropland, under contract. Most of this land has been planted with a perennial grass cover to protect the soil and retain its moisture. Strong support of the program by Prowers County farmers continues as 38% of the counties HEL cropland has been offered for conservation practices.

While the following initiatives are not meant to be enforceable, many efforts are underway that further reduce blowing dust and its impacts. These include:

- The CRP has moved to include all available area lands into area contracts. These contracts are good through 2007. Success of the CRP initiatives is measured through ongoing monitoring of the contracts to ensure ample grass coverage to minimize blowing dust.
- CRP sends out information several times per year through radio and the area newspaper to further reach farmers interested in topsoil protection.
- In response to the significant Colorado drought the CRP is working with multiple parties in extensive annual planning efforts to limit blowing dust and its impacts. These planning efforts change year to year depending on the severity of the drought.

These programs were in effect during the period addressed in the analysis in this attachment (2004-2009). The NRCS in Colorado has also worked through the CRP and other programs to bring erosion control practices to croplands throughout eastern Colorado.

Beginning in September of 2009, however, 743,238 acres of the 2,412,238 acres of Colorado land under the CRP were to become eligible to come out of the CRP in the subsequent five-year period. Much of this land is in eastern and southeastern Colorado. Land released from the CRP has the potential to increase the amount of lands contributing to blowing dust in eastern Colorado. The NRCS, however, has identified a variety of alternatives and options to promote soil conservation on the lands that will be released from CRP contracts (http://www.co.nrcs.usda.gov/programs/CRP/crp.html).

These include conservation easements, enrollment in the Continuous CRP (a subset of CRP), transition to grazing land, and managing land for wildlife. Returning the land to cropland is also an option, and the NRCS is encouraging conservation tillage for these lands. The Colorado office of the NRCS has a form letter that will be sent to those whose contracts will be expiring. It includes the following:

"Over the next five years, approximately two million acres of land contracted under the Conservation Reserve Program (CRP) will expire in Colorado. A significant portion of <<COUNTY NAME>> County land enrolled in CRP either expired last September, or will be expiring within the next few years."

"The current crop prices are causing many landowners to consider farming their CRP land by returning it to crop production. However, there are some valuable information and alternatives that must be considered prior to making this major decision…"

"While some fields may return to cropland, many acres of CRP are environmentally sensitive and not suited to annual crop production. By making the decision to return CRP land to cropland you will impact the local economy, landscape, and environment. It is important for you to consider several factors before deciding what to do when your CRP contract expires: soil productivity and limitations, past yields, commodity prices, production, conversion or renovation costs, and other required investments."

"There are several options available to landowners who have expiring CRP contracts. These options include: re-enrolling eligible acres into Continuous CRP, returning land to a cropland rotation, utilizing and enhancing forage as pasture or hayland, or managing the expired CRP for wildlife."

"It is important for you to develop an NRCS approved conservation plan, particularly when considering converting expired CRP acres to cropland. It requires proper planning and good management. NRCS conservation plans provide an inventory and complete assessment of a landowner's resources, as well as recommendations for improving those resources, which if implemented can positively impact your bottom line."

According to the NRCS brochure: (see http://www.co.nrcs.usda.gov/programs/CRP/CCRP_1.pdf)

"The Continuous CRP program (CCRP), a subset of the Conservation Reserve Program, offers year round enrollment and increased incentives to keep these small sensitive areas in permanent cover.

***Practice Incentive Payment (PIP)** - This is an additional incentive of 40% of eligible practice establishment costs.*

***Signing Incentive Payment (SIP)** - This is a one-time incentive payment for signing the Continuous CRP contract.*

***Rental Incentive Payment** - This is an additional incentive payment equal to the shown percentage of the CRP rental rate. All of the above incentives are in addition to the regular CRP rental payment. For more information on CCRP, contact your local USDA Service Center."*

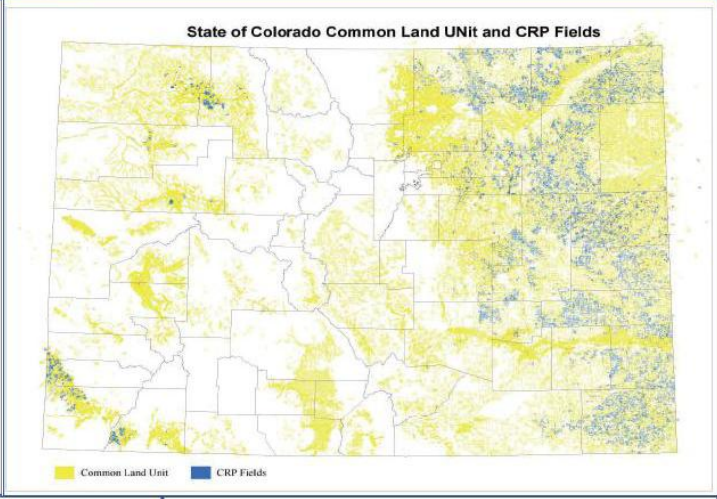
Details on the incentive payments for various categories of land use conservation practices can be found in the NRCS brochure link above. Additional information on NRCS post-CRP programs is presented in Figures 5 - 7 below.

Figure 5: NRCS Overview of Post-CRP Options in Colorado

NRCS
Natural Resources Conservation Service

Post-CRP Options in Colorado

Currently, there are 2,412,238 Conservation Reserve Program (CRP) acres in Colorado. On September 30, 2009, 743,238 acres are eligible to come out of CRP.



Conversion to Grazing Land Requirements and Options

-Develop a conservation plan that outlines grazing management and development needs.

-Install identified conservation measures for proper grazing distribution.
>If using Environmental Quality Incentives Program funds to install identified practices producer MUST WAIT UNTIL CRP CONTRACT EXPIRES.
>May be able to locate and use other funds to begin some work prior to contract expiration.

-Conservation Easements.
>Grassland Reserve Program (grazing land only).
>Farm and Ranchland Protection Program (crop and grass lands).

Conversion to Cropland Requirements and Options

-Develop a conservation plan to maintain compliance and program eligibility.
>Identified measure must be installed within the first year.
>Must address Threatened and Endangered Species and Species of Concern.
-Current policy allows some work to begin up to 6-months prior to expiration of contract.

-Will be a minimum of 12-months before income begins.

-Will again be subject to market and weather changes, both negative and positive.

For further information, contact your local conservation district, Natural Resources Conservation Service, or Farm Service Agency office.

NRCS is an Equal Opportunity Provider and Employer

Figure 6: NRCS Information on Transition to Grazing Land

USDA NRCS

United States Department of Agriculture
Natural Resources Conservation Service

Expiring CRP Options—Transition to Grazingland

USDA Natural Resources Conservation Service — Colorado March 2009

Between the years 2009 and 2013, approximately 2 million acres of CRP contracts will expire in Colorado. This mass contract expiration has the potential to impact soil erosion, wildlife habitat, water quality, farm incomes and rural economies. However, the USDA Natural Resources Conservation Service provides technical assistance and financial incentives to producers and landowners as they chose to transition these lands to other uses.

Incentives for Grazing Management

Through its Environmental Quality Incentives Program, the NRCS offers technical and financial assistance for producers with expiring CRP who want to transition that land management into a grazing management system. The NRCS can provide financial assistance for installing necessary infrastructure such as fences, livestock pipeline and tanks. The NRCS also provides management incentive payments for grazing management, weed control and wildlife habitat management.

Potential Payments for CRP transition to Grazingland

Practice	Example Incentive Payment (Tentative costs calculated for Northeast Colorado)
382-Fence	$0.85/Foot
516-Pipeline	$1.35/foot
614-Watering Facililty	$0.60—$1.35/gallon
528-Grazing Management	$10/acre
595-Pest Management	$10/acre
645-Upland Wildlife Habitat Management	$10—$15/acre

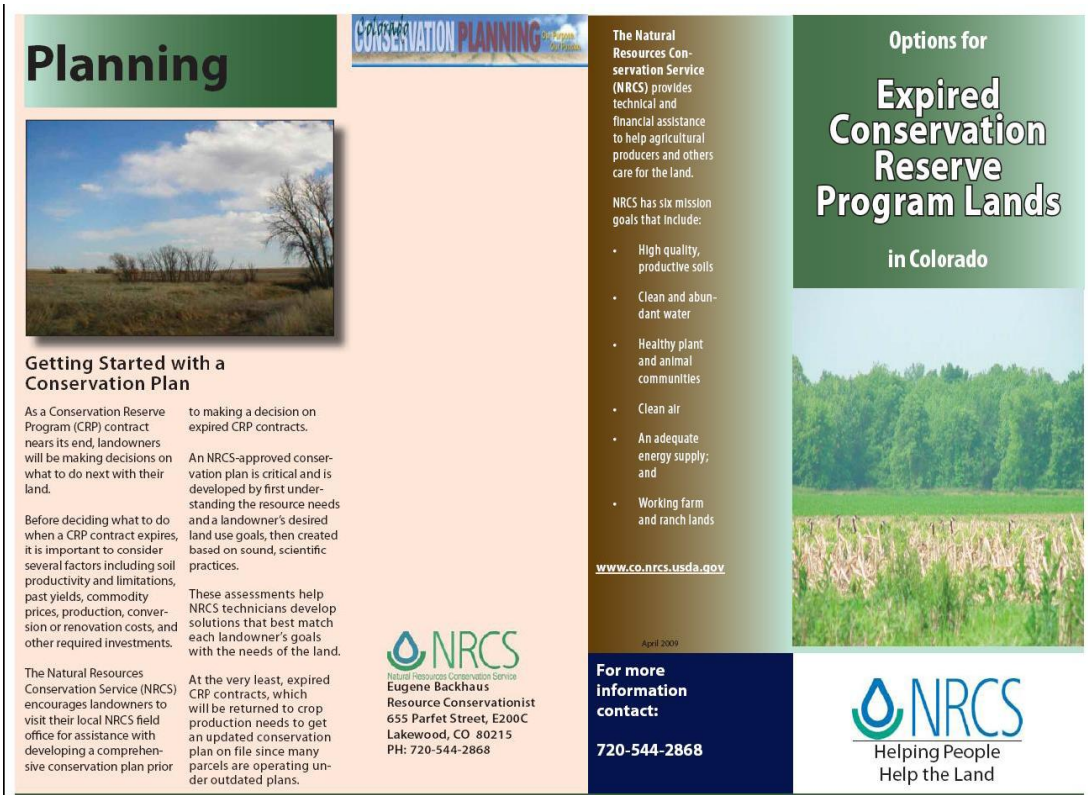
NRCS Technical Assistance

NRCS Field Office staff, Range Conservationists and Wildlife Biologists are available to offer technical advice on implementing or expanding a grazing system onto CRP ground.

For More Information

To learn more about these incentives, or for other options for expiring CRP, contact your local NRCS Field Office. Log on to www.nrcs.usda.gov to find your nearest office.

Figure 7: NRCS Brochure on Post-CRP Options (pages 1 and 2)



Planning

Getting Started with a Conservation Plan

As a Conservation Reserve Program (CRP) contract nears its end, landowners will be making decisions on what to do next with their land.

Before deciding what to do when a CRP contract expires, it is important to consider several factors including soil productivity and limitations, past yields, commodity prices, production, conversion or renovation costs, and other required investments.

The Natural Resources Conservation Service (NRCS) encourages landowners to visit their local NRCS field office for assistance with developing a comprehensive conservation plan prior to making a decision on expired CRP contracts.

An NRCS-approved conservation plan is critical and is developed by first understanding the resource needs and a landowner's desired land use goals, then created based on sound, scientific practices.

These assessments help NRCS technicians develop solutions that best match each landowner's goals with the needs of the land.

At the very least, expired CRP contracts, which will be returned to crop production needs to get an updated conservation plan on file since many parcels are operating under outdated plans.

CONSERVATION PLANNING

NRCS
Natural Resources Conservation Service

Eugene Backhaus
Resource Conservationist
655 Parfet Street, E200C
Lakewood, CO 80215
PH: 720-544-2868

The Natural Resources Conservation Service (NRCS) provides technical and financial assistance to help agricultural producers and others care for the land.

NRCS has six mission goals that include:

- High quality, productive soils
- Clean and abundant water
- Healthy plant and animal communities
- Clean air
- An adequate energy supply; and
- Working farm and ranch lands

www.co.nrcs.usda.gov

April 2009

For more information contact:

720-544-2868

Options for

Expired Conservation Reserve Program Lands

in Colorado

NRCS
Helping People Help the Land

Overview

The Conservation Reserve Program (CRP) protects millions of acres of American topsoil from erosion and is designed to safeguard the Nation's natural resources.

Acreage enrolled in the CRP is planted to resource-conserving vegetative covers, making the program a major contributor to increased wildlife populations in many parts of the country.

Over two million acres of Colorado's grasslands are currently listed within the CRP with contracts expiring through 2013.

Due to changes in the 2008 Farm Bill, agricultural producers having these grasslands may find little opportunity to re-enroll their land in the CRP.

According to the Colorado Deparment of Agriculture, if a large portion of expiring CRP acres go back into cropland, Colorado will lose many of its important conservation benefits accrued over the lifetime of the contracts that established these grasslands including reduced soil erosion and improved wildlife habitat.

However, if some of the expiring CRP lands are kept in grass and managed for other uses, many of the conservation benefits realized during the CRP contracts could be maintained or enhanced.

Options

Options for Expiring Conservation Reserve Program Lands

Conversion to Grazing Land

Requirements and Options

- Develop a conservation plan that outlines grazing management and development needs
- Install identified conservation measures for proper grazing distribution
- If using Environmental Quality Incentives Program funds to install identified practices, producer **MUST WAIT UNTIL CRP CONTRACT EXPIRES**
- May be able to locate and use other funds to begin some work prior to contract expiration
- Conservation Easements
- Grassland Reserve Program (grazing land only)
- Farm and Ranchland Protection Program (crop and grass lands)

Conversion to Cropland

Requirements and Options

- Develop a conservation plan to maintain compliance and program eligibility
- Identified measure must be installed within the first year
- Must address Threatened and Endandered Species and Species of Concern
- Current policy allows some work to begin up to five months prior to expiration of contract
- Will be at least until July 2010 before income begins
- Will again be subject to market and weather changes, both negative and positive.

Enrollment in Continuous CRP

- **SAFE** - The new State acres for wildlife Enhancement (SAFE) program focuses on high priority wildlife habitat areas, and aims to retain desirable cover to halt the decline of numerous at-risk species.
- **CREP** - the Conservation Reserve Enhancement Program helps protect environmentally sensitive land, decrease erosion, and restore wildlife habitat.
- **High priority conservation practices** - an opportunity to re-enroll a portion of expired land into Continuous CRP and focuses on environmentally sensitive land.

Conservation Reserve Program - encourages farmers to convert highly erodible cropland or other environmentally sensitive acreage to vegetative cover, such as tame or native grasses, wildlife plantings, trees, filterstrips, or riparian buffers.

NRCS Programs that Can Help:

- Environmental Quality Incentives Program (EQIP)
- Continuous Conservation Reserve Program (CCRP)
- Grassland Reserve Program (GRP)
- Farm and Ranchland Protection Program (FRPP)

2. Limestone-Graveyard Creeks Watershed Project

A watershed improvement project in the Limestone-Graveyard Creeks Watershed involved approximately 60,000 acres of land north of the Arkansas River between Hasty (Bent County) and Lamar. An estimated 44,500 acres of the watershed area are classified as priority land due to the highly erodible nature of the soil. Over 2,000 acres of agricultural cropland northwest of Lamar are included in this watershed project.

Working with the NRCS, each farmer will create their own conservation plan with costs for improvements split equally between farmers and the federal government. The 15-year project will help reduce soil erosion and improve water quality and efficiency through conservation tillage practices and/or other conservation efforts. In short, the Limestone-Graveyard Creeks Watershed Project will help to reduce soil erosion and lower the impacts of blowing soils during future high wind events. The Watershed project is regarded as an ongoing successful program as most eligible acres are enrolled.

3. New Initiatives

The Natural Resources Conservation Service has many efforts underway that further reduce blowing dust and its impacts through the following initiatives, which are not meant to be enforceable:

- A comprehensive rangeland management program;
- Tree planting program;
- Drip irrigation purchase program, and;
- A multi-party drought response planning effort coordinated through the State of Colorado Governor's office.

These are but a few of the efforts at the local, county, and regional level underway to reduce emissions of PM10 and limit impacts.

Colorado State University Co-Op Extension Office

The CSU Co-Op Extension Office has many efforts underway that further reduce blowing dust and its impacts through the following initiatives, which are not meant to be enforceable:

- Crop residue efforts that encourage no- or low-till practices. These have been deemed appropriate and useful in reducing blowing dust.
- Ongoing outreach efforts to educate area agricultural producers on soil management programs. These include one-on-one visitations and annual meetings with various corn and wheat programs to discuss crop management.
- Drought workshops to protect topsoil throughout the county.

Prowers County

Prowers County Land Use Plan

Beginning in 1997, Prowers County with the assistance of local officials, environmental health officers and the general public began preparing a county land use plan. The Prowers County Land Use Plan is designed to have wide-reaching authority over the myriad of land use issues involving building (construction sites), siting, health, fire, environmental codes, and other social concerns associated with the City of Lamar and Prowers County. The county land use plan, entitled *"Guidelines and Regulations for Areas and Activities of State Interest – County of Prowers – State of Colorado"*, was adopted on April 19, 2004 and amended on August 17, 2006. The plan incorporates provisions to minimize airborne dust including re-vegetation of disturbance areas associated with land development.

This section fulfills the requirements of Elements 4 and 5 of the Natural Events Policy as described on page 6 of the NEAP.

Element 6: Periodic Evaluation

EPA's Natural Events Policy guidance requires the state to periodically reevaluate: 1) the conditions causing violations of the PM10 NAAQS in the area, 2) the status of implementation of the NEAP, and 3) the adequacy of the actions being implemented.

This plan represents the third revision to the original NEAP dated April 1998. Evaluation of the effectiveness of the NEAP included several key strategies to ensure protection of public health and a robust plan. Strategies included: review of Natural Events Policy in specific relation to the Lamar community, review of the effectiveness and appropriateness of ongoing control strategies, review of meteorological and climatological conditions leading to blowing dust, a review of local and regional PM10 monitoring data, review of the established emission inventory and identification of any new emission sources, review of the blowing dust advisory protocol and notification records, public/stakeholder meetings and community outreach/education efforts. The Division commits to continually review the effectiveness of the Lamar Natural Events Action Plan and improve the effort, where feasible.

This section fulfills the requirements of Element 6 of the Natural Events Policy as described on page 6 of the NEAP.

Element 7: Stakeholder Involvement and Element 8: Public Review & Comment

Stakeholder Involvement:

The EPA's NEAP development guidance states that the NEAP should be developed by the State in conjunction with the stakeholders affected by the Plan. The Division worked with stakeholders mentioned throughout this document. Numerous meetings and telephone conversations occurred with stakeholders, and the final agreement here reflects strategies offered as part of the NEAP.

Public Review:

The Division made this documentation available for, and presented the NEAP to, the public to ensure ample public review and comment. Examples of these efforts, beginning with the earliest community involvement, include:

- "Air Quality Documentation in Support of High Wind Events in Lamar available for Public
- Review/Comment at the Lamar Public Library…" February 1997
- Briefing of the Prowers County Board of Commissioners, February 1997
- "Media Advisory" notifying the public of upcoming Lamar City Council meeting to discuss the NEAP, January 1998
- Briefing the Lamar City Council, January 1998
- Dissemination of the "Blowing Dust Health Advisory Brochure - Lamar Area" through the Southeast Land and Environment offices, January 1998 through the present
- Briefing of the Colorado Air Quality Control Commission, February 1998
- "Lamar Area Air Quality Natural Events Action Plan to be Available for Public Review" at the Lamar Public Library and Lamar City Complex - February 6 through March 6, 1998" this notice was published in the Lamar Daily News on February 6, 1998
- Briefing of the Lamar City Council on the PM10 Maintenance Plan, including a discussion of the Maintenance Plan's relationship to attainment status and the use of other air quality tools (e.g., Lamar NEAP), August 2000
- "Media Advisory" notifying the public of an upcoming Lamar area meeting to discuss air quality issues. This notice ("Lamar Air Quality Topic of Public Meeting Tonight") was published in the Lamar Daily News, August 29, 2000
- Local meeting with public to discuss air quality issues in the Lamar area including the planned PM10 Maintenance Plan, the area Natural Events Action Plan, and other initiatives to reduce blowing dust and its impacts on the public, August 2000
- Briefing of the Prowers County Board of Commissioners on the PM10 Maintenance Plan including a discussion of the Maintenance Plan's relationship to attainment status and the use of other air quality tools (e.g., Lamar NEAP), August 2000
- Briefing of the Lamar City Council on the Update to the Draft PM10 Maintenance Plan and its relationship to attainment status and the use of other air quality tools (e.g., Lamar NEAP), February 2001
- Briefing of the Lamar City Council on the Update to the Final PM10 Maintenance Plan and its relationship to attainment status and the use of other air quality tools (e.g., Lamar NEAP), August 2001

- Briefing of the Colorado Air Quality Control Commission, May 2002
- Briefing of the Lamar Air Quality Task Force, May 2002
- Briefing of the Colorado Air Quality Control Commission, January 2003
- Public Notice, “Revised (2003) Natural Events Action Plan for Lamar, Colorado” Available for Public Review and Comment at the Lamar Public Library, April 2003
- Briefing the Lamar City Council, April 2003
- Public Notice, “Revised (2012) Natural Events Action Plan for Lamar, Colorado” Available for Public Review and Comment, September 2012

This section fulfills the requirements of Elements 7 and 8 of the Natural Events Policy as described on page 6 of the NEAP.

Element 9: Submittal to EPA

The original Lamar NEAP was submitted to EPA in April 1998. The second NEAP was revised in 2003 and submitted to EPA. This third NEAP was revised in 2012 and will be submitted as an Appendix to this second revision to the Lamar PM10 Maintenance Plan. According to the Natural Events Policy, the NEAP should be revised on a five-year schedule.

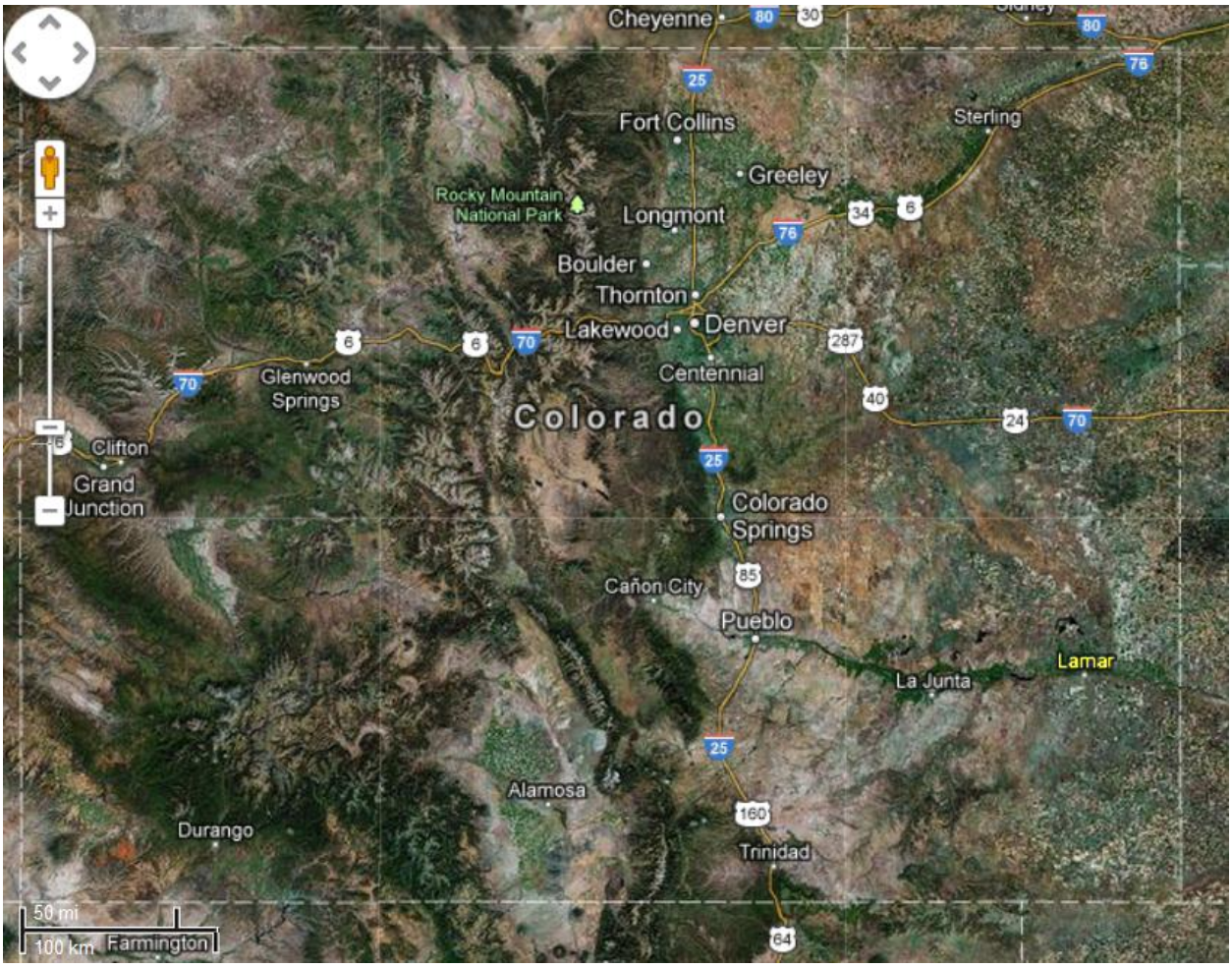
This section fulfills the requirements of Element 9 of the Natural Events Policy as described on page 6 of the NEAP.

APPENDIX B: High Wind Events

Data Analysis

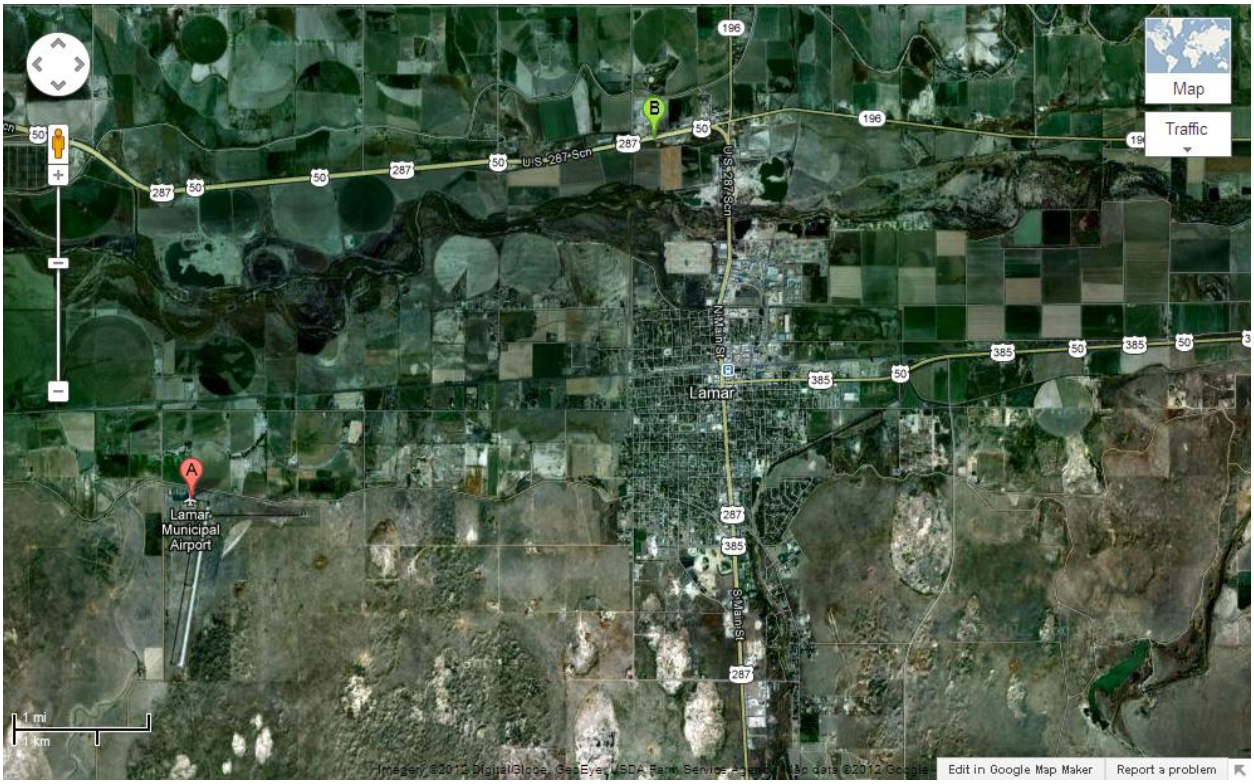
Figure B-1 provides a map of Colorado and Lamar is located in the southeastern portion of the state along the Arkansas River.

Figure B-1: State of Colorado Map - Location of Lamar Area



There are two meteorological (MET) stations identified in Figure B-2 below, that monitor wind speed and direction in the area, the Lamar Municipal Airport (operated by NWS – labeled A) and Lamar Port of Entry (operated by CDPHE-APCD – labeled B). The Municipal Airport MET station is located west of Lamar off County Road 3.5 and Port of Entry MET station is located north of Lamar at 7100 US Highway 50.

Figure B-2: Location of Meteorological Stations in Lamar Area



There are a number of exceedances of the 24-hour PM10 NAAQS that were recorded at the two Lamar PM10 Monitoring stations that were either not flagged as exceptional events or the events were flagged but no technical analysis was prepared and submitted to EPA. The below Table I provides a list of these exceedances which are analyzed in this document to confirm that high winds were the likely factor contributing to the exceedance.

Table I: Lamar Area PM10 Exceedances (2001-2011)

	Event Date	Monitor Site	PM10 Value [µg/m3]	Data Flag	EPA Review/Filing Status
1	04/11/01	Power Plant	152	none	Event not flagged
2	02/06/09	Power Plant	233	none	Event not flagged
3	03/05/09	Municipal	176	High Wind	Flagged – Not submitted
4	03/26/09	Power Plant	171	none	Event not flagged
5	04/03/11	Power Plant	169	High Wind	Prelim Analysis
6	11/05/11	Power Plant	192	High Wind	Prelim Analysis

The following data sources were used in the evaluation of the above listed PM10 exceedances:

The Lamar Airport meteorological data was obtained at the following link:

http://mesowest.utah.edu/cgi-bin/droman/download_ndb.cgi?stn=KLAA&year1=2012&day1=27&month1=7&hour1=&timetype=GMT&unit=0

The wind speed at the Lamar Airport is recorded using an Automated Surface Observing System (ASOS), which archives wind speed data for every 2-minute period of each hour. Consequently, the "average hourly wind speed" is the arithmetic average of the 2-minute values over the hour. The "maximum wind speed" is the highest 2-minute wind speed recorded during the hourly period.

The Lamar Airport Wind Rose graphs can be obtained at the following link:

http://www.wrcc.dri.edu/sod/arch/eeF.html

The meteorological data for the Lamar Port of Entry site can be obtained from the following website link (use "Air Quality Monitoring Site" Option):

http://www.colorado.gov/airquality/report.aspx

The US Drought Maps for the western US can be found at the following link:

http://droughtmonitor.unl.edu/archive.html#

1. PM10 Exceedance of 152 ug/m3 on April 11, 2001

Table II provides the wind speed data from the Lamar Municipal Airport for the April 11, 2001 PM10 exceedance of 152 µg/m3 that was not flagged as a high wind event by the Division.

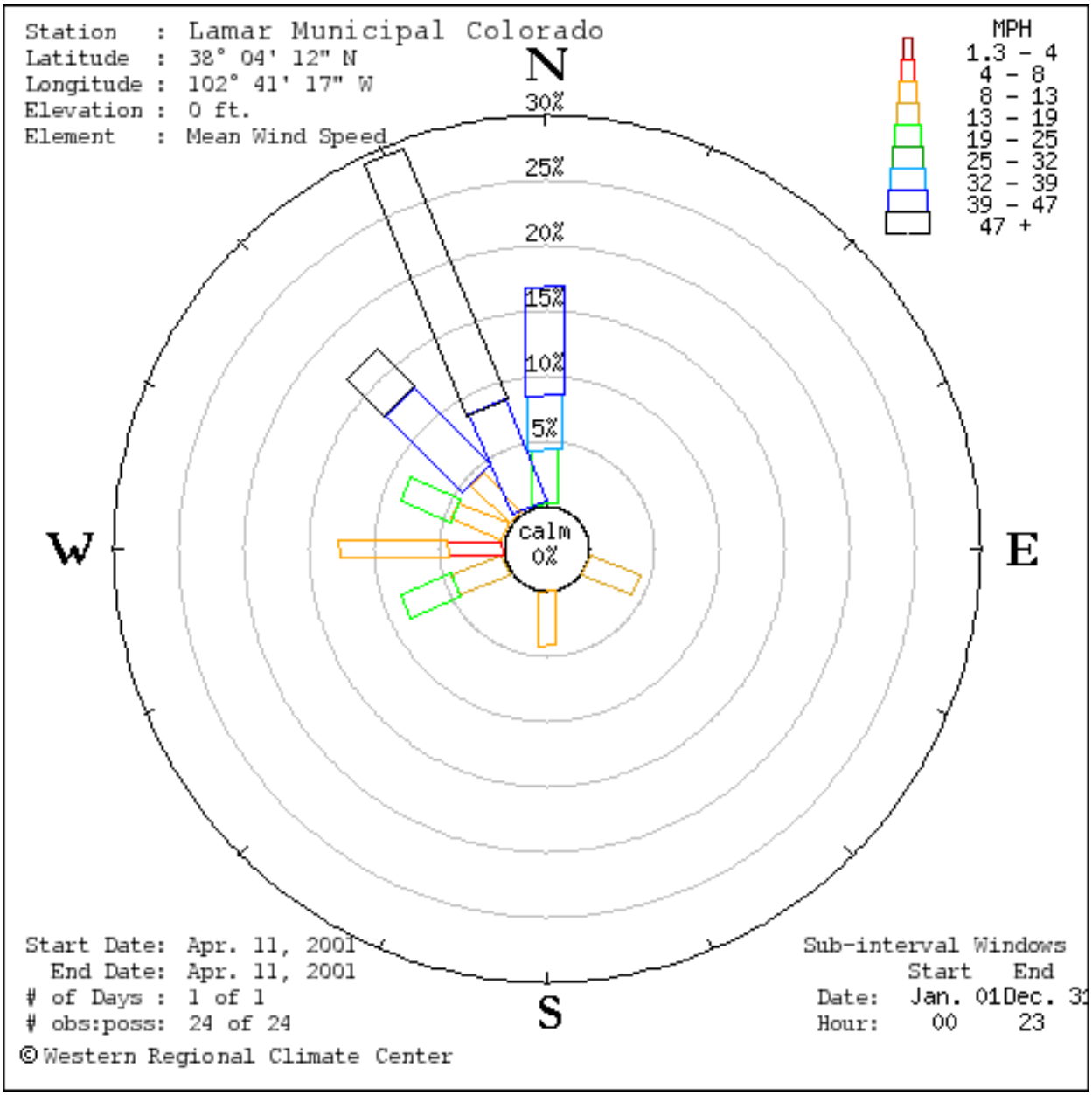
Table II: Lamar Municipal Airport – Meteorological Data for April 11, 2001

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	10.4	170		42.1	82
2:00 AM	24.2	250		39	86
3:00 AM	16.1	240		37	89
4:00 AM	23	290	**27.6**	43	82
5:00 AM	**42.6**	320	**55.2**	39	82
6:00 AM	**44.9**	330	**59.8**	39	79
7:00 AM	**46**	320	**66.7**	41	73
8:00 AM	**50.6**	320	**65.6**	41	79
9:00 AM	**48.3**	330	**63.3**	39.9	83
10:00 AM	**54.1**	330	**69**	42.1	76
11:00 AM	**57.5**	330	**73.6**	45	60
12:00 PM	**50.6**	340	**70.2**	46.9	56
1:00 PM	**54.1**	340	**67.9**	48	51
2:00 PM	**43.7**	340	**59.8**	48.9	48
3:00 PM	**42.6**	350	**54.1**	50	46
4:00 PM	**41.4**	0	**52.9**	48	47
5:00 PM	**32.2**	0	**43.7**	45	53
6:00 PM	23	0	**32.2**	43	60
7:00 PM	11.5	290		42.1	62
8:00 PM	9.2	310		39	70
9:00 PM	9.2	270		36	75
10:00 PM	9.2	270		37	75
11:00 PM	6.9	270		34	79
12:00 AM	5.8	260		36	79
Average	*31.6*	*312*		*41.8*	*70*
Maximum	*57.5*		*73.6*	*50*	*89*
Minimum	*5.8*			*34*	*46*

For 13 hours, the average hourly wind speed (in bold) ranged from 32.2–57.5 miles per hour (mph) with peak gusts (in bold) from 27.6-73.6 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. No measureable precipitation fell during the 24-hour period. The wind rose for the April 11, 2001 event

(see Figure B-3 below) indicates the winds were predominantly from a north-northwesterly direction.

Figure B-3: Lamar Municipal Airport – Wind Rose for April 11, 2001



No wind speed data is available for the April 11, 2001 date at the Lamar Port of Entry site.

The Western Drought Map (see below Figure B-4) indicates no drought conditions in southeast Colorado.

Figure B-4: Western US Drought Monitor Map – Released April 19, 2001

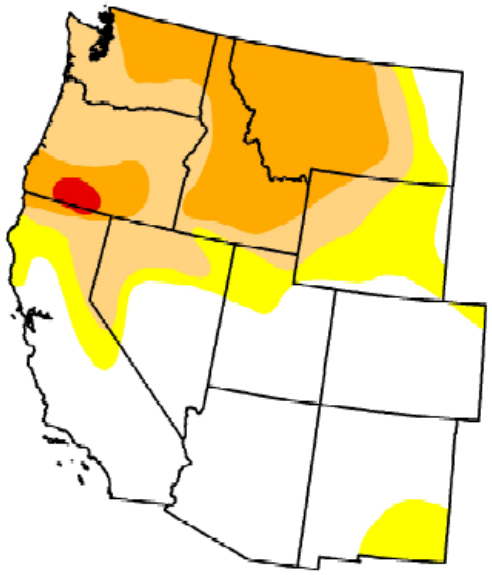
U.S. Drought Monitor

West

April 17, 2001
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.4	51.6	37.8	19.5	0.6	0.0
Last Week (04/10/2001 map)	48.7	51.3	37.6	19.5	0.6	0.0
3 Months Ago (01/23/2001 map)	55.4	44.6	7.1	2.9	0.2	0.0
Start of Calendar Year (01/02/2001 map)	78.1	21.9	7.1	2.7	0.2	0.0
Start of Water Year (10/03/2000 map)	36.3	63.7	33.1	11.5	1.3	0.0
One Year Ago (04/18/2000 map)	76.5	23.5	4.9	1.7	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, April 19, 2001
Author: David Miskus, NOAA/CPC/JAWF

2. PM10 Exceedance of 233 ug/m3 on February 6, 2009

Table III provides the wind speed data from the Lamar Municipal Airport for the February 6, 2009 PM10 exceedance of 233 µg/m3 that was not flagged as a high wind event by the Division.

Table III: Lamar Municipal Airport – Meteorological Data for February 6, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	6.9	230		23	35
2:00 AM	0	0		25	34
3:00 AM	3.5	290		24.1	35
4:00 AM	4.6	220		27	34
5:00 AM	4.6	220		25	37
6:00 AM	8.1	260		25	37
7:00 AM	6.9	240		24.1	39
8:00 AM	6.9	260		34	33
9:00 AM	8.1	250		46.9	19
10:00 AM	15	280		60.1	13
11:00 AM	**28.8**	290	**44.9**	70	10
12:00 PM	**34.5**	290	**48.3**	71.1	8
1:00 PM	**38**	280	**49.5**	71.1	8
2:00 PM	**38**	280	**49.5**	71.1	8
3:00 PM	**39.1**	290	**47.2**	70	7
4:00 PM	**29.9**	280	**38**	69.1	8
5:00 PM	21.9	290	**28.8**	64.9	9
6:00 PM	18.4	280		60.1	12
7:00 PM	13.8	260		52	16
8:00 PM	16.1	280		52	17
9:00 PM	8.1	280		43	24
10:00 PM	4.6	240		39.9	27
11:00 PM	8.1	220		39.9	29
12:00 AM	5.8	230		36	34
Average	*15.4*	*266*		*46.8*	*22*
Maximum	*39.1*		*49.5*	*71.1*	*39*
Minimum	*0*			*23*	*7*

For six hours, the average wind speed (in bold) ranged from 28.8–39.1 miles per hour (mph) with peak gusts (in bold) from 28.8-49.5 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. No measureable precipitation fell during the 24-hour period. The wind rose for the February 6, 2009

event (see Figure B-4 below) indicates the winds were predominantly from a westerly direction.

Figure B-5: Lamar Municipal Airport – Wind Rose for February 6, 2009

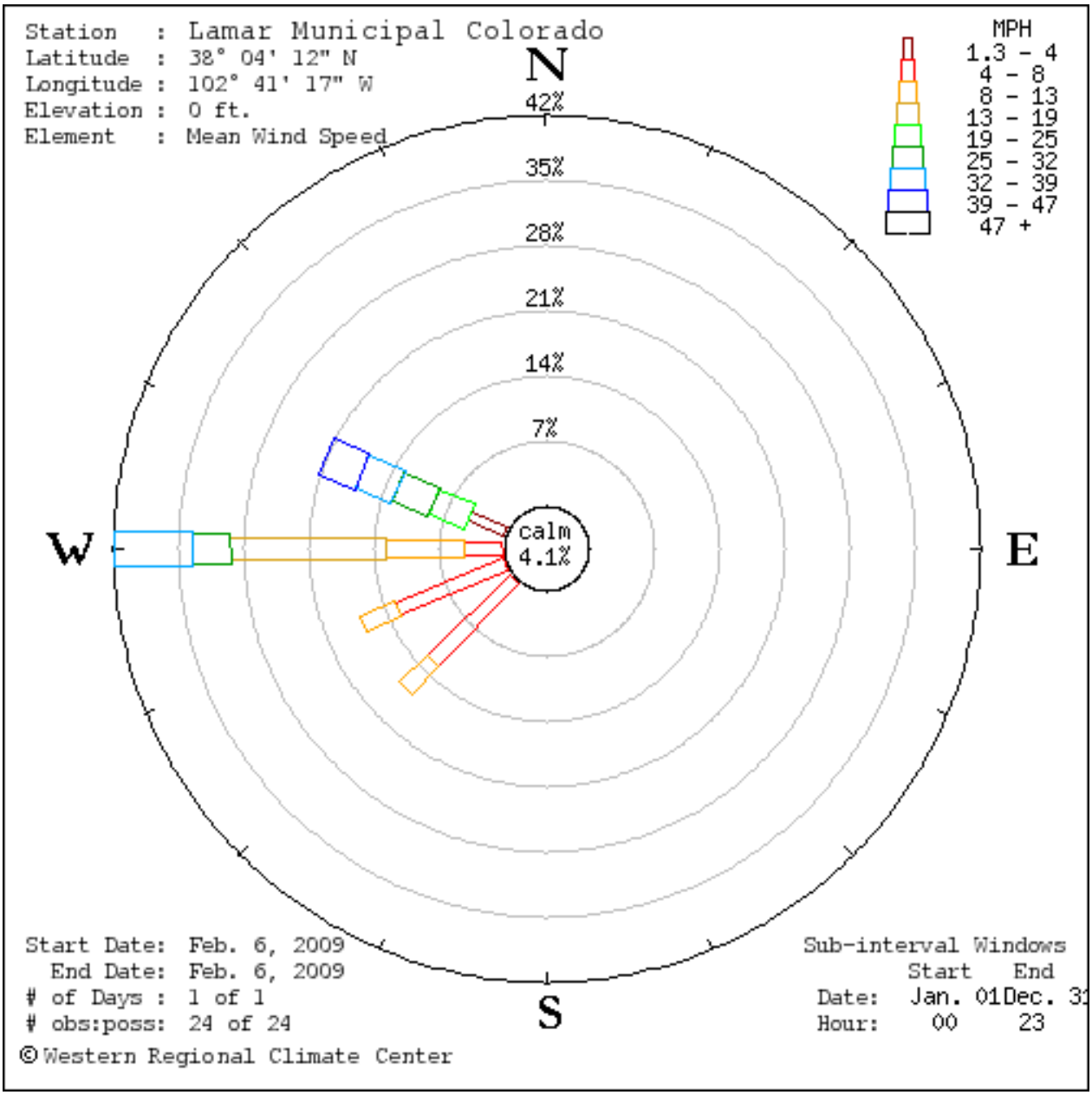


Table IV provides the wind speed data from the Lamar Port of Entry for the February 6, 2009 PM10 exceedance of 233 µg/m3 that was not flagged as a high wind event by the Division.

Table IV: Lamar Port of Entry – Meteorological Data for February 6, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	1.2	271.9		26.7	
2:00 AM	0.9	255.6		26.0	
3:00 AM	3.9	277.2		25.0	
4:00 AM	1.7	262.3		25.3	
5:00 AM	3.6	267.8		25.6	
6:00 AM	5.8	270.3		26.8	
7:00 AM	6.1	262.5		28.2	
8:00 AM	9.4	254.2		38.0	
9:00 AM	14.2	261.1		51.1	
10:00 AM	21.3	256.7		64.4	
11:00 AM	**34.5**	256.4		69.0	
12:00 PM	**35.4**	253.0		69.8	
1:00 PM	**33.1**	258.6		69.7	
2:00 PM	**31.9**	258.9		69.6	
3:00 PM	**29.0**	264.9		69.1	
4:00 PM	22.0	262.7		67.4	
5:00 PM	16.1	265.2		62.1	
6:00 PM	12.0	243.3		56.8	
7:00 PM	11.0	268.3		51.1	
8:00 PM	11.3	261.0		49.7	
9:00 PM	6.8	237.6		44.7	
10:00 PM	4.3	269.0		39.9	
11:00 PM	3.1	289.1		39.9	
12:00 AM					
Average	***13. 4***	***262.1***		***47.2***	
Maximum	***35.4***			***69.8***	
Minimum	***0.9***			***25.0***	

For five (5) hours, the average wind speed (in bold) ranged from 29.0 to 35.4 miles per hour (mph), which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. Until very recently, the Lamar Port of Entry Met station did not have the data retention capabilities to track with peak wind gusts.

The Western Drought Map (see below Figure B-6) indicates moderate drought conditions in southeast Colorado.

Figure B-6: Western US Drought Monitor Map – Released February 12, 2009

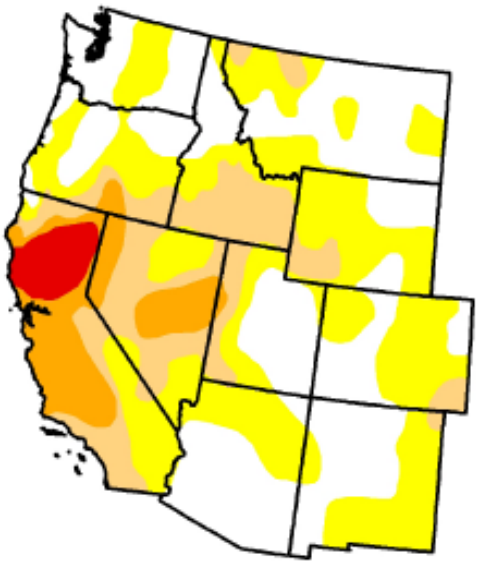
U.S. Drought Monitor

February 10, 2009
Valid 7 a.m. EST

West

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	37.1	62.9	26.2	10.7	2.5	0.0
Last Week (02/03/2009 map)	41.1	58.9	28.6	10.7	2.5	0.0
3 Months Ago (11/18/2008 map)	36.0	64.0	29.3	8.6	0.0	0.0
Start of Calendar Year (01/06/2009 map)	37.4	62.6	28.9	8.8	0.4	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (02/12/2008 map)	33.2	66.8	37.7	16.9	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, February 12, 2009
Author: Rich Tinker, CPC/NOAA

3. PM10 Exceedance of 176 ug/m3 on March 5, 2009

Table V provides the wind speed data from the Lamar Municipal Airport for the March 5, 2009 PM10 exceedance of 176 µg/m3, which was flagged as a high wind event by the Division. However, the technical analysis of the event was not completed before the EPA submittal deadline.

Table V: Lamar Municipal Airport – Meteorological Data for March 5, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	11.5	240		46	38
2:00 AM	8.1	290		46.9	35
3:00 AM	0	0		46	35
4:00 AM	15	230		45	34
5:00 AM	13.8	230		45	34
6:00 AM	23	280	**31.1**	55.9	14
7:00 AM	20.7	280		55	18
8:00 AM	**33.4**	280	**49.5**	64	13
9:00 AM	**26.5**	280	**42.6**	66	12
10:00 AM	**38**	270	**49.5**	69.1	8
11:00 AM	**33.4**	280	**46**	72	7
12:00 PM	**39.1**	290	**50.6**	73.9	6
1:00 PM	**31.1**	280	**43.7**	75.9	5
2:00 PM	**31.1**	290	**44.9**	75.9	5
3:00 PM	**34.5**	290	**43.7**	77	4
4:00 PM	**31.1**	280	**41.4**	75	4
5:00 PM	**28.8**	300	**44.9**	72	6
6:00 PM	18.4	290		66.9	8
7:00 PM	11.5	300		57.9	12
8:00 PM	8.1	290		52	14
9:00 PM	12.7	100		50	24
10:00 PM	9.2	110		46	27
11:00 PM	9.2	130		43	29
12:00 AM	5.8	170		39	34
Average	***20.6***	***275***		***59***	***18***
Maximum			***50.6***	***77***	***38***
Minimum				***39***	***4***

For ten hours, the average wind speed (in bold) ranged from 26.5 – 39.1 mph with peak gusts (in bold) from 31.1-50.6 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. No measureable

precipitation fell during the 24-hour period. The wind rose for the March 5, 2009 event (see Figure B-5 below) indicates the winds were predominantly from a west-north westerly direction.

Figure B-7: Lamar Municipal Airport – Wind Rose for March 5, 2009

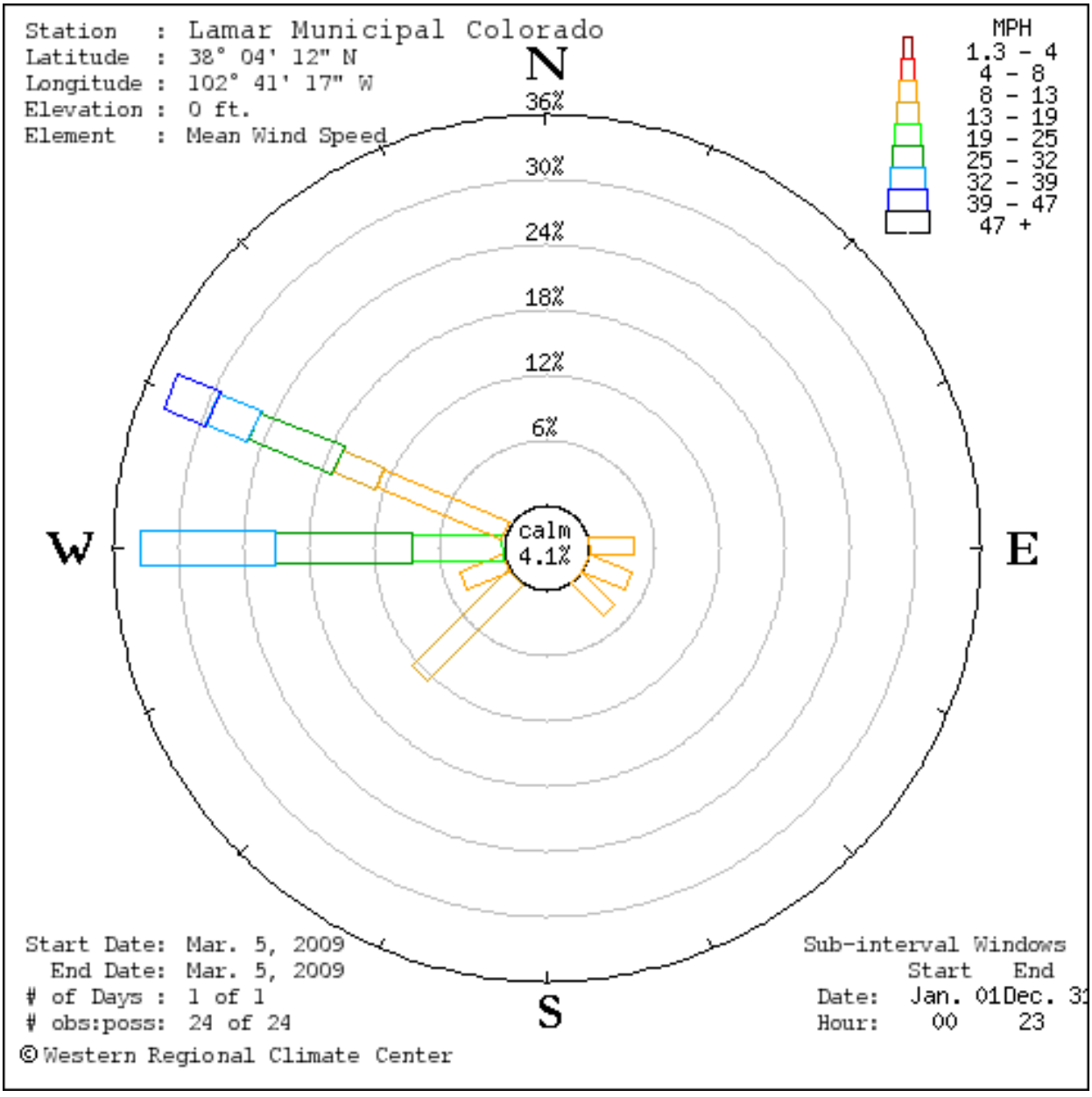


Table VI provides the wind speed data from the Lamar Port of Entry for the March 5, 2009 PM10 exceedance of 176 µg/m3, which was flagged as a high wind event by the Division. However, the technical analysis of the event was not completed before the EPA submittal deadline.

Table VI: Lamar Port of Entry – Meteorological Data for March 5, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	0.0	-		47.7	
2:00 AM	5.9	299.6		46.3	
3:00 AM	3.6	276.5		49.5	
4:00 AM	8.8	238.1		52.0	
5:00 AM	12.2	257.7		51.9	
6:00 AM	15.9	251.4		61.9	
7:00 AM	**29.6**	252.0		64.2	
8:00 AM	**30.4**	258.0		67.0	
9:00 AM	**33.9**	257.3		69.6	
10:00 AM	**36.1**	260.0		72.1	
11:00 AM	**33.3**	257.8		73.6	
12:00 PM	**32.9**	257.0		74.5	
1:00 PM	**31.1**	255.9		75.0	
2:00 PM	**31.4**	259.7		74.5	
3:00 PM	**32.5**	260.8		73.2	
4:00 PM	**29.1**	264.3		69.6	
5:00 PM	20.4	270.0		64.7	
6:00 PM	15.5	278.1		60.5	
7:00 PM	10.1	285.8		52.0	
8:00 PM	11.2	26.7		47.7	
9:00 PM	6.5	70.6		43.1	
10:00 PM	5.6	97.7		40.2	
11:00 PM	5.0	94.4		38.4	
12:00 AM					
Average	***19.7***	***229.6***		***59.5***	
Maximum	***36.1***			***75.0***	
Minimum	***3.6***			***38.4***	

For ten hours, the average wind speed (in bold) ranged from 29.1 – 36.4 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. Until very recently, the Lamar Port of Entry Met station did not have the data retention capabilities to track with peak wind gusts.

The Western Drought Map (see below Figure B-8) indicates moderate drought conditions in southeast Colorado.

Figure B-8: Western US Drought Monitor Map – Released March 12, 2009

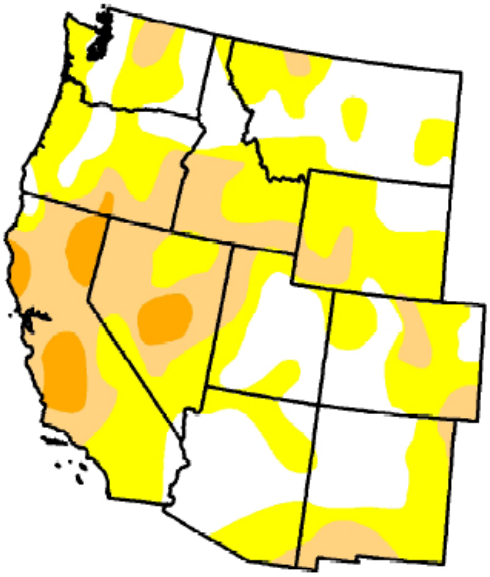
U.S. Drought Monitor

March 10, 2009
Valid 7 a.m. EST

West

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	33.7	66.3	25.1	4.2	0.0	0.0
Last Week (03/03/2009 map)	35.1	64.9	28.0	8.0	0.6	0.0
3 Months Ago (12/16/2008 map)	27.5	72.5	31.0	10.0	0.8	0.0
Start of Calendar Year (01/06/2009 map)	37.4	62.6	28.9	8.8	0.4	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (03/11/2008 map)	42.3	57.7	34.2	16.0	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

USDA National Drought Mitigation Center

Released Thursday, March 12, 2009

http://drought.unl.edu/dm

Author: M. Brewer/L. Love-Brotak, NOAA/NESDIS/NCDC

4. PM10 Exceedance of 171 ug/m3 on March 26, 2009

Table VII provides the wind speed data from the Lamar Municipal Airport for the March 26, 2009 PM10 exceedance of 171 µg/m3 that was not flagged as a high wind event by the Division.

Table VII: Lamar Municipal Airport – Meteorological Data for March 26, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	5.8	90		33.1	72
2:00 AM	8.1	110		32	72
3:00 AM	9.2	130		30.9	73
4:00 AM	3.5	20		27	76
5:00 AM	4.6	50		25	79
6:00 AM	3.5	90		25	79
7:00 AM	6.9	120		30	72
8:00 AM	11.5	130		33.1	69
9:00 AM	13.8	110		37.9	59
10:00 AM	11.5	100		43	62
11:00 AM	15	110		44.1	62
12:00 PM	19.6	140	**26.5**	44.1	70
1:00 PM	18.4	130	**29.9**	48	44
2:00 PM	24.2	100	**33.4**	46	51
3:00 PM	**28.8**	70	**39.1**	35.1	72
4:00 PM	**33.4**	60	**39.1**	32	69
5:00 PM	**27.6**	50	**40.3**	28	79
6:00 PM	**27.6**	50	**34.5**	26.1	87
7:00 PM	20.7	40	**34.5**	25	86
8:00 PM	16.1	40	**33.4**	24.1	86
9:00 PM	21.9	40	**31.1**	23	86
10:00 PM	18.4	30	**27.6**	23	86
11:00 PM	17.3	40	**29.9**	21.9	83
12:00 AM	20.7	40	**32.2**	19.9	87
Average	***16.2***	***78***		***31.6***	***73***
Maximum	***33.4***		***40.3***	***48***	***87***
Minimum	***3.5***			***19.9***	***44***

For four hours, the average wind speed (in bold) ranged from 27.6 – 33.4 mph with peak gusts (in bold) from 26.5-40.3 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events. At 8:00 PM, 0.01 inches of measureable precipitation fell over the 24-hour period. The wind rose for the March 26,

2009 event (see Figure B-6 below) indicates the winds were predominantly from a north easterly direction.

Figure B-9: Lamar Municipal Airport – Wind Rose for March 26, 2009

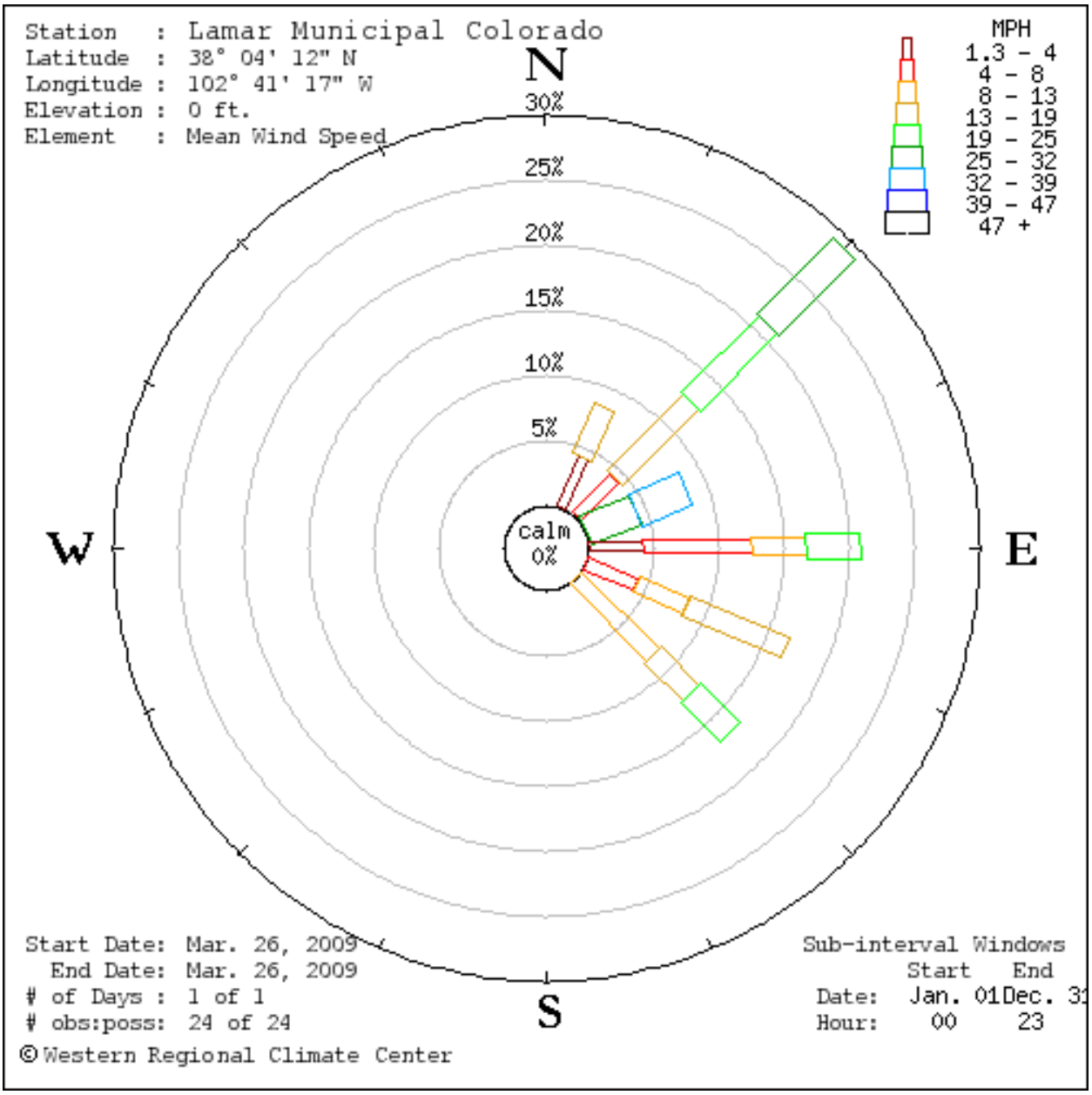


Table VIII provides the wind speed data from the Lamar Port of Entry for the March 26, 2009 PM10 exceedance of 171 µg/m3 that was not flagged as a high wind event by the Division.

Table VIII: Lamar Port of Entry – Meteorological Data for March 26, 2009

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	8.1	59		34.0	
2:00 AM	5.8	66		30.8	
3:00 AM	5.0	32		28.9	
4:00 AM	4.1	18		27.7	
5:00 AM	6.2	18		27.4	
6:00 AM	4.0	85		27.7	
7:00 AM	7.1	92		31.0	
8:00 AM	11.4	85		34.8	
9:00 AM	12.4	81		41.4	
10:00 AM	15.2	74		43.7	
11:00 AM	16.0	93		44.0	
12:00 PM	21.6	97		47.4	
1:00 PM	23.1	84		46.6	
2:00 PM	23.9	33		37.3	
3:00 PM	23.9	30		33.5	
4:00 PM	24.8	20		29.6	
5:00 PM	21.7	15		26.7	
6:00 PM	20.9	12		25.1	
7:00 PM	17.4	14		24.5	
8:00 PM	17.2	8		23.9	
9:00 PM	17.0	5		23.2	
10:00 PM	18.7	7		21.9	
11:00 PM	16.0	5		21.1	
12:00 AM	18.0	2		19.7	
Average	***14.2***	***45.6***		***31.3***	
Maximum	***24.3***			***47.4***	
Minimum	***3.8***			***19.7***	

The average wind speed appears to be below the EPA suggested minimum wind speed threshold to entrain and suspend particulate matter.

The Western Drought Map (see below Figure B-10) indicates moderate drought conditions in southeast Colorado.

Figure B-10: Western US Drought Monitor Map – Released March 24, 2009

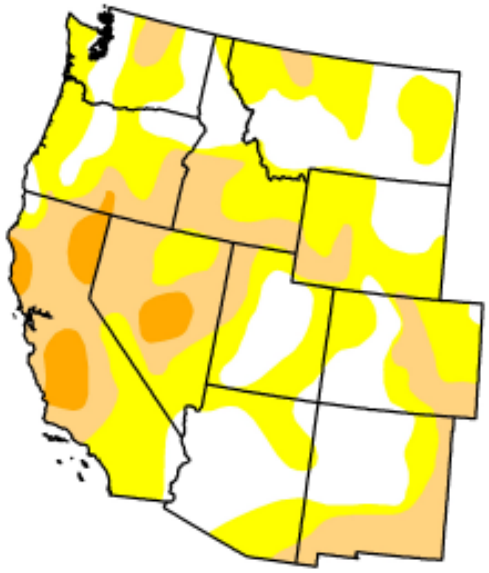
U.S. Drought Monitor

March 24, 2009
Valid 7 a.m. EST

West

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.7	68.3	28.5	4.2	0.0	0.0
Last Week (03/17/2009 map)	33.4	66.6	25.8	4.2	0.0	0.0
3 Months Ago (12/30/2008 map)	35.4	64.7	28.9	9.0	0.4	0.0
Start of Calendar Year (01/06/2009 map)	37.4	62.6	28.9	8.8	0.4	0.0
Start of Water Year (10/07/2008 map)	41.3	58.7	28.6	10.4	0.1	0.0
One Year Ago (03/25/2008 map)	41.4	58.6	36.4	15.4	0.0	0.0



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

USDA National Drought Mitigation Center

Released Thursday, March 26, 2009

Author: Brad Rippey, U.S. Department of Agriculture

5. PM10 Exceedance of 169 ug/m3 on April 3, 2011

Table IX provides the wind speed data from the Lamar Municipal Airport for the April 3, 2011 PM10 exceedance of 169 µg/m3 that was flagged as a high wind event by the Division.

Table IX: Lamar Municipal Airport – Meteorological Data for April 3, 2011

Time (MST)	Temp (Deg F)	Relative Humidity (%)	Wind Speed (mph)	Wind Gust (mph)	Wind Direction (Degrees)	Weather	Visibility (miles)
0:53 AM	55.9	22	12.7		200	clear	10
1:53 AM	54	24	12.7		200	clear	10
2:53 AM	55	24	11.5		200	clear	10
3:53 AM	66.9	16	15		210	clear	10
4:53 AM	62.1	20	17.3		200	clear	10
5:53 AM	69.1	15	**25.3**	**31.1**	230	clear	10
6:53 AM	69.1	15	20.7		240	clear	10
7:53 AM	73.9	14	21.9	31.1	260	clear	10
8:53 AM	75.9	14	**35.7**	**44.9**	240	clear	10
9:53 AM	80.1	12	**32.2**	**46**	250	clear	10
10:53 AM	82	10	**25.3**	**44.9**	250	clear	10
11:53 AM	84.9	7	**38**	**47.2**	270	clear	10
12:53 PM	84.9	7	**36.8**	**48.3**	250	clear	10
1:53 PM	84.9	7	**36.8**	**58.7**	240	clear	10
2:53 PM	84.9	8	**41.4**	**54.1**	250	clear	10
3:53 PM	55.4	41	**41.4**	**55.2**	10	**haze**	**1.25**
4:53 PM	53.6	41	**43.7**	**56.4**	10	**haze**	**1**
5:53 PM	53.6	41	**34.5**	**54.1**	360	**haze**	**1.25**
6:53 PM	54	41	**41.4**	**54.1**	360	**haze**	**1.25**
7:53 PM	53.6	41	**36.8**	**52.9**	10	**haze**	**1.5**
8:53 PM	53.6	41	**39.1**	**50.6**	10	**haze**	**2**
9:53 PM	53.6	41	**32.2**	**50.6**	10	**haze**	**3**
10:53 PM	51.8	43	**41.4**	**51.8**	10	**haze**	**3**
11:53 PM	51.8	43	**33.4**	**51.8**	10	**haze**	**2.5**
Average	***59***	***33***	***29***		***212***		
Maximum	***84.9***	***72***	***43.7***	***58.7***			
Minimum	***36***	***7***	***11.5***	***31.1***			

For 17 hours, the average wind speed (in bold) ranged from 25.3 – 43.7 mph with peak gusts (in bold) from 31.1- 58.7 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed

threshold in the Draft EPA Guidance on High Wind Events. Around 10:00 PM, light snow was reported for two hours over the 24-hour period.

The wind rose for the April 3, 2011 event (see Figure B-11 below) indicates the winds were predominantly from a northerly direction.

Figure B-11: Lamar Municipal Airport – Wind Rose for April 3, 2011

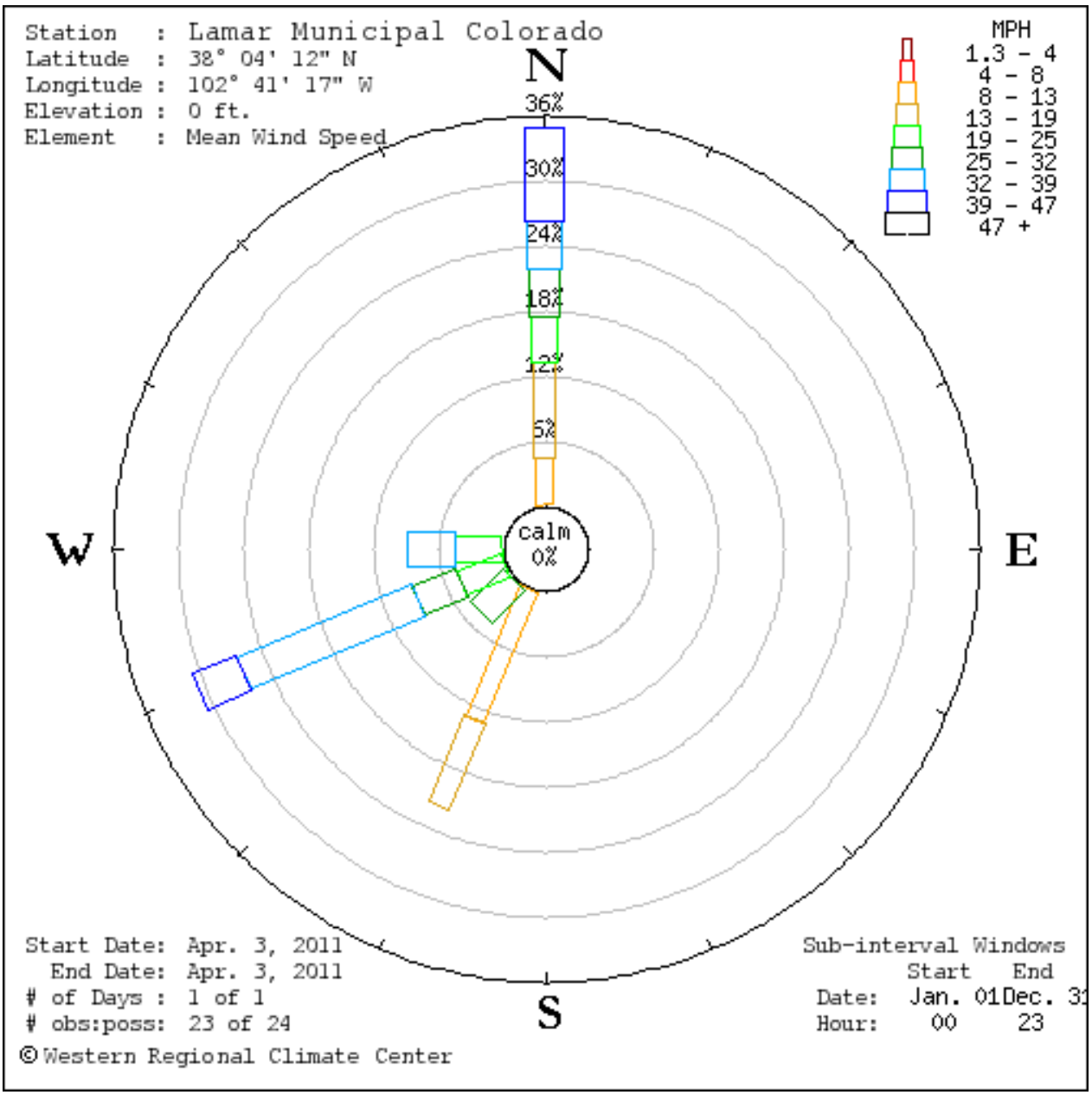


Table X provides the wind speed data from the Lamar Port of Entry for the April 3, 2011 PM10 exceedance of 169 µg/m3 that was flagged as a high wind event by the Division.

Table X: Lamar Port of Entry – Meteorological Data for April 3, 2011

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM	10.9	259.6		59	
2:00 AM	7.1	264.5		58	
3:00 AM	6.0	277.3		60	
4:00 AM	12.4	219.5		65	
5:00 AM	17.0	229.9		70	
6:00 AM	16.1	238.1		69	
7:00 AM	16.9	253.8		70	
8:00 AM	**24.9**	251.3		74	
9:00 AM	**32.2**	251		76	
10:00 AM	**30.2**	257.7		78	
11:00 AM	**32.1**	261.4		80	
12:00 PM	**35.0**	257.6		82	
1:00 PM	**33.7**	246.8		82	
2:00 PM	**38.0**	255.6		81	
3:00 PM	**24.6**	338		71	
4:00 PM	**34.2**	358.4		56	
5:00 PM	**33.4**	357.2		49	
6:00 PM	**30.4**	359.2		43	
7:00 PM	**27.4**	359.7		40	
8:00 PM	**24.9**	2.6		37	
9:00 PM	22.8	351.1		38	
10:00 PM	19.1	352.1		38	
11:00 PM	15.7	351		39	
12:00 AM	15.6	336.4		39	
Average	***23.3***	***278.8***		***60.6***	
Maximum	***38.0***			***82.0***	
Minimum	***6.0***			***37.0***	

For 13 hours, the average wind speed (in bold) ranged from 24.6 – 38.0 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events.

The Western Drought Map (see below Figure B-12) indicates severe drought conditions in southeast Colorado.

Figure B-12: Western US Drought Monitor Map – Released April 7, 2011

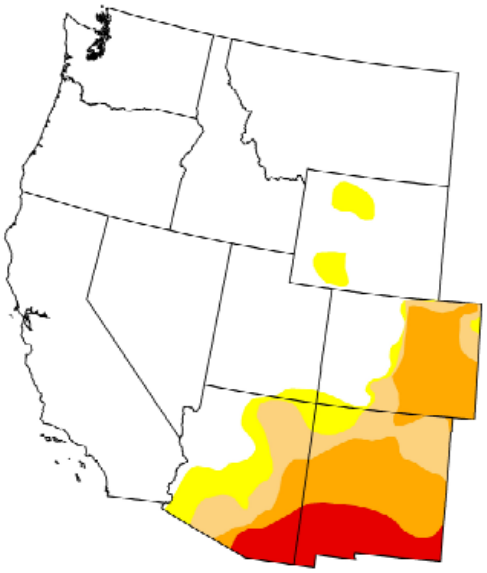
U.S. Drought Monitor

West

April 5, 2011
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	76.09	23.91	19.18	13.39	4.16	0.00
Last Week (03/29/2011 map)	76.08	23.92	18.56	13.12	2.12	0.00
3 Months Ago (01/04/2011 map)	74.72	25.28	11.69	0.89	0.00	0.00
Start of Calendar Year (12/28/2010 map)	73.26	26.74	11.98	0.89	0.00	0.00
Start of Water Year (09/28/2010 map)	62.50	37.50	8.14	0.56	0.00	0.00
One Year Ago (03/30/2010 map)	42.22	57.78	21.40	4.89	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://drought.unl.edu/dm

Released Thursday, April 7, 2011
National Drought Mitigation Center,

6. PM10 Exceedance of 192 ug/m3 on November 5, 2011

Table XI provides the wind speed data from the Lamar Municipal Airport for the November 5, 2011 PM10 exceedance of 192 µg/m3 that was flagged as a high wind event by the Division.

Table XI: Lamar Municipal Airport – Meteorological Data for November 5, 2011

Time (MST)	Temp (Deg F)	Relative Humidity (%)	Wind Speed (mph)	Wind Gust (mph)	Wind Direction (Degrees)	Weather	Visibility (miles)
0:53 AM	51.1	44	5.8		80	clear	10
1:53 AM	51.1	44	13.8		180	clear	10
2:53 AM	48	49	5.8		170	clear	10
3:53 AM	48	49	9.2		170	clear	10
4:53 AM	46.9	52	6.9		120	clear	10
5:53 AM	45	53	13.8		130	clear	10
6:53 AM	41	62	12.7		110	clear	10
7:53 AM	37.9	67	16.1		120	clear	10
8:53 AM	43	55	16.1		110	clear	10
9:53 AM	51.1	42	16.1		110	clear	10
10:53 AM	66.2	24	21.9	28.8	160	clear	10
11:53 AM	66.9	24	21.9	28.8	170	clear	10
12:53 PM	72	19	**38**	59.8	200	clear	8
1:53 PM	71.6	20	**54.1**	67.9	200	haze	5
2:53 PM	72	20	**49.5**	65.6	210	mostly cloudy	8
3:53 PM	69.8	21	**47.2**	61	200	partly cloudy	8
4:53 PM	69.8	21	**44.9**	57.5	200	haze	6
5:53 PM	68	24	**34.5**	55.2	210	mostly cloudy	10
6:53 PM	66.9	24	**32.2**	42.6	230	partly cloudy	10
7:53 PM	62.1	18	**33.4**	50.6	210	mostly clear	10
8:53 PM	57.9	17	**29.9**	40.3	240	partly cloudy	10
9:53 PM	57	22	**28.8**	40.3	230	partly cloudy	10
10:53 PM	54	28	23		220	clear	10
11:53 PM	54	27	**25.3**	33.4	240	clear	10
Average	***55.8***	***37.4***	***23***		***173.6***		
Maximum	***72***	***73.0***	***54.1***	***67.9***			
Minimum	***37.9***	***17.0***	***3.5***	***28.8***			

For 11 hours, the average wind speed (in bold) ranged from 25.3 – 54.1 mph with peak gusts (in bold) from 28.8 – 67.9 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events.

The wind rose for the November 5, 2011 event (see Figure B-13 below) indicates the winds were predominantly from a southwesterly direction.

Figure B-13: Lamar Municipal Airport – Wind Rose for November 5, 2011

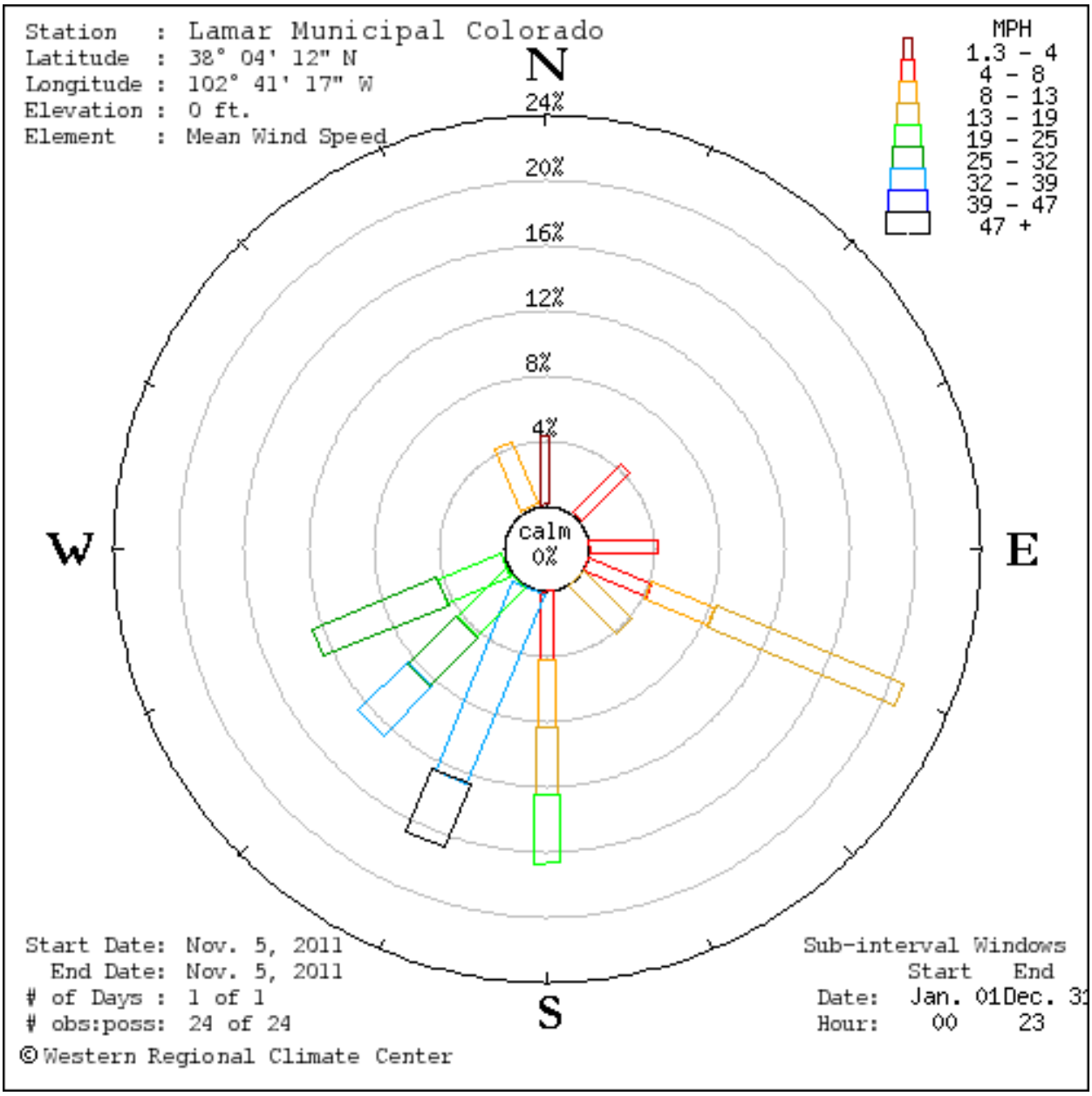


Table XII provides the wind speed data from the Lamar Port of Entry for the November 5, 2011 PM10 exceedance of 192 µg/m3 that was flagged as a high wind event by the Division.

Table XII: Lamar Port of Entry – Meteorological Data for November 5, 2011

Time (LST)	Average WS (mph)	Wind Direction (Degrees)	Max. Wind Speed (mph)	Temperature (Deg F)	Relative Humidity (%)
1:00 AM				53	
2:00 AM	7.2	128.5		51	
3:00 AM	7.8	148.7		51	
4:00 AM	4.4	110.0		49	
5:00 AM	7.4	98.7		46	
6:00 AM	10.0	93.4		43	
7:00 AM	10.3	103.1		39	
8:00 AM	11.5	104.8		41	
9:00 AM	13.5	108.1		46	
10:00 AM	14.1	119.4		56	
11:00 AM	**24.9**	176.0		68	
12:00 PM	**39.5**	197.4		70	
1:00 PM	**38.5**	200.6		68	
2:00 PM	**31.1**	207.1		66	
3:00 PM	**30.2**	212.1		64	
4:00 PM	**31.2**	230.3		60	
5:00 PM	**26.8**	233.6		58	
6:00 PM	23.1	245.8		55	
7:00 PM	21.0	232.2		55	
8:00 PM	19.0	251.1		54	
9:00 PM	12.7	294.8		50	
10:00 PM	4.0	302.5		46	
11:00 PM	2.2	345.8		42	
12:00 AM				39	
Average	***16.7***	***188.1***		***52.9***	
Maximum	***39.5***			***70.0***	
Minimum	***1.3***			***39.0***	

For 7 hours, the average wind speed (in bold) ranged from 24.9 – 39.5 mph, which is sufficient to entrain and suspend particulate matter and exceeds the suggested minimum sustained wind speed threshold in the Draft EPA Guidance on High Wind Events.

The Western Drought Map (see below Figure B-14) indicates severe drought conditions in southeast Colorado.

Figure B-14: Western US Drought Monitor Map – Released November 10, 2011

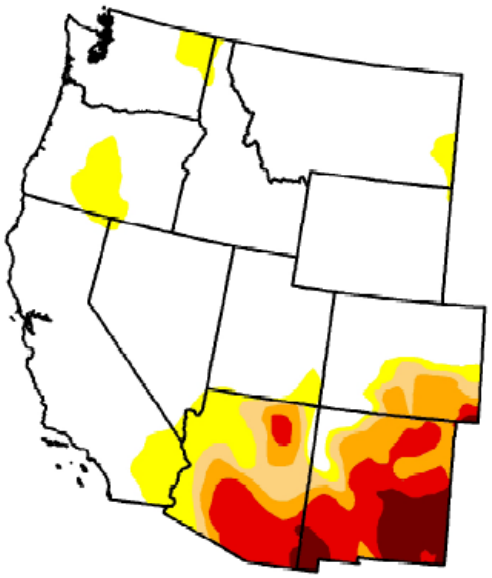
U.S. Drought Monitor

November 8, 2011
Valid 7 a.m. EST

West

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	73.00	27.00	18.55	14.96	9.50	2.88
Last Week (11/01/2011 map)	74.16	25.84	18.67	15.19	9.60	2.87
3 Months Ago (08/09/2011 map)	75.17	24.83	18.82	15.30	10.88	5.44
Start of Calendar Year (12/28/2010 map)	73.26	26.74	11.98	0.89	0.00	0.00
Start of Water Year (09/27/2011 map)	66.72	33.28	19.04	14.99	9.30	3.81
One Year Ago (11/02/2010 map)	69.02	30.98	5.39	0.19	0.00	0.00



Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

Released Thursday, November 10, 2011
Brian Fuchs, National Drought Mitigation Center

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APPENDIX C: Blowing Dust Health Advisory Brochure

cause wheezing, coughing and respiratory irritation in individuals with sensitive airways.

What is being done to reduce the PM10 pollution?

The city of Lamar has implemented numerous dust and PM10 controls over the years, and the "Lamar Natural Events Action Plan" has been developed to reduce emissions of PM10 during high wind events. The following describes many past, present and future efforts designed to reduce PM10 emissions:

- Intensive sweeping of paved roads within the City limits
- Tree planting to form windbreaks
- Closure of the East Lamar Landfill during extremely windy conditions
- Sodding of numerous parks and recreation areas
- Stabilization and dust suppression along the Burlington Northern/Santa Fe rail line
- Placement of highly erodible and environmentally sensitive agricultural lands into long-term conservation areas
- Implementation of Land Use Plans that reduce dust emissions from construction activities, gravel pits, and other open areas
- Controls for industrial sources
- Programs to reduce emissions from woodstoves and fireplaces

How to get additional information:

Lamar Area
Environmental Health Southeastern Colorado Offices - 336-8721
City of Lamar - 336-9438

State Assistance
Colorado Air Pollution Control Division - (303) 692-3221 or 692-3113

LAMAR COLORADO

STATE OF COLORADO 1876

Colorado Department of Public Health and Environment

BLOWING DUST HEALTH ADVISORY BROCHURE

Lamar Area

January 1998

Why are there blowing dust health advisories for the Lamar area?

The Lamar area is subject to episodes of blowing dust during periods of high winds and drought conditions. During many of these events, the amount of dust in the air has exceeded the national and state air quality standards for particulate matter, subjecting Lamar residents and visitors to unhealthy levels of air pollution.

What is the blowing dust advisory program?

Though dust storms can occur throughout the year in southeastern Colorado, the typical season for large scale or major blowing dust episodes in the Lamar area is between September 1st and May 31st. During this period, the Environmental Health Southeast office will issue advisories when wind speeds and other conditions are currently or are forecasted to be favorable for blowing dust episodes. The National Weather Service in Pueblo and the Colorado Air Pollution Control Division in Denver will assist with the forecasting.

Advisories will be broadcast on local radio stations KLMR and KVAY

What actions should be taken during a blowing dust advisory?

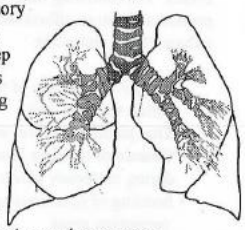
When an advisory is issued by the Environmental Health Southeast office, Lamar area residents and visitors will be asked to:

- Avoid outdoor exercise and strenuous activities and stay indoors with windows shut. This is especially important for persons with coronary or respiratory illnesses, and other major health problems.
- Reduce or avoid driving as this generates dust.
- Stop all woodburning and open burning activities.
- Reduce or postpone tilling, plowing, construction and other activities that will raise dust.

What is Particulate Matter and how is your health affected?

Particulate matter pollution consists of very tiny liquid and solid particles floating in the air. The size of the particles are less than 10 microns in diameter, or 1/7th the thickness of a human hair. This size of particulate matter is commonly referred to as "PM10." PM10 can be made of a mixture of particles including dust, soot, smoke, salts and metals. Some particles are capable of undergoing chemical reactions in the atmosphere and can be formed from gases. Because PM10 is so small and is capable of being inhaled deep into the lungs, it is an important public health and environmental concern - especially in areas susceptible to frequent wind storms where dust and soils can be easily lifted into the air and transported.

While larger particles are kept from the lungs by mechanical means, such as impaction in the nose, throat and larynx, the smaller PM10 particles can slip past these respiratory defenses and penetrate deep into the lungs and harm lung tissue.



While PM10 can cause health problems for everyone, certain people are more vulnerable to PM10's health effects than others. These sensitive populations include children, the elderly, those suffering from asthma or bronchitis, exercising adults, and those who already have heart and lung disease, especially among the elderly. Particulate matter air pollution is especially harmful to people with lung disease such as asthma and chronic obstructive pulmonary disease which includes chronic bronchitis and emphysema. Lung disease is the third leading cause of death in the United States. Exposure to particulate air pollution can trigger asthma attacks and